MANUFACTURERS RECORD

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A Publication for Executives

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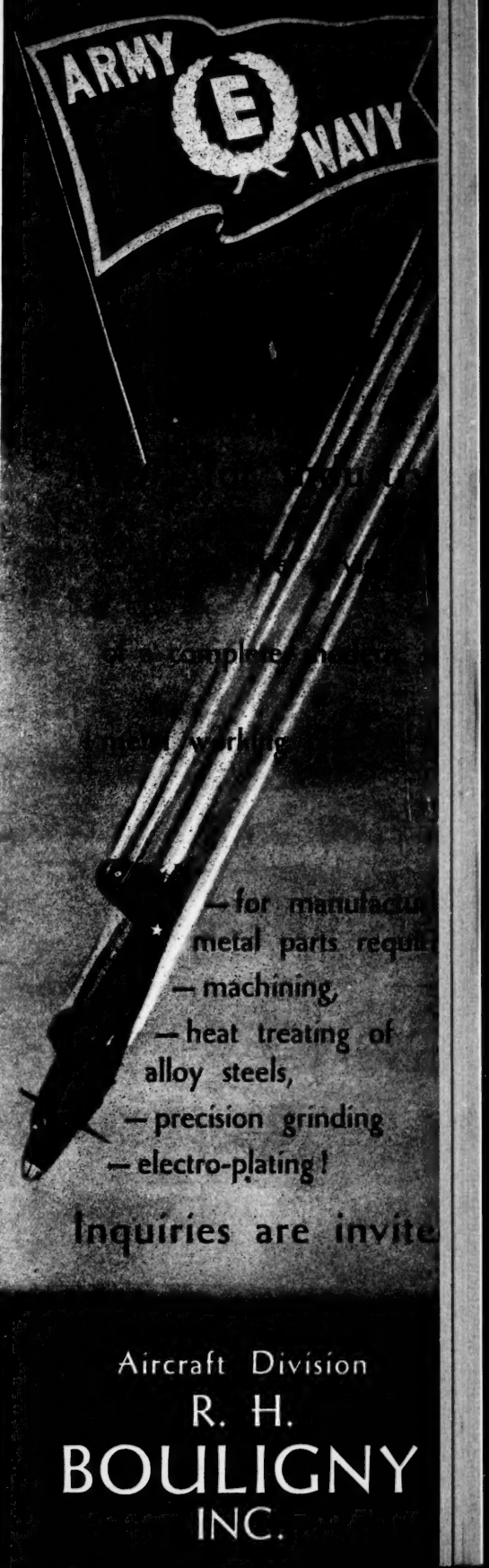

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Have the multitudinous demands of war-paced days forced you to defer your investigation of a new location for your operations?

No need for concern! We know where the desirable sites are. We have complete information on the many factors which you will want to consider before choosing a site for your plant.

Our trained specialists can supply you quickly with facts about choice locations in our territory. Your inquiry will be held in strict confidence. A request for our services entails no obligation or cost on your part. Simply address:

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SEABOARD
AIR LINE RAILWAY
THROUGH THE HEART OF THE SOUTH

Little Grains of Sand

"Little drops of water, little grains of sand,
Make the mighty ocean, and the pleasant land."

Real Americans do not oppose or fear changing the Constitution by constitutional methods, but they do vigorously oppose the dangerous practice of setting aside the Constitution by evasion, by plea of emergency, or by unconstitutional assumption of power.

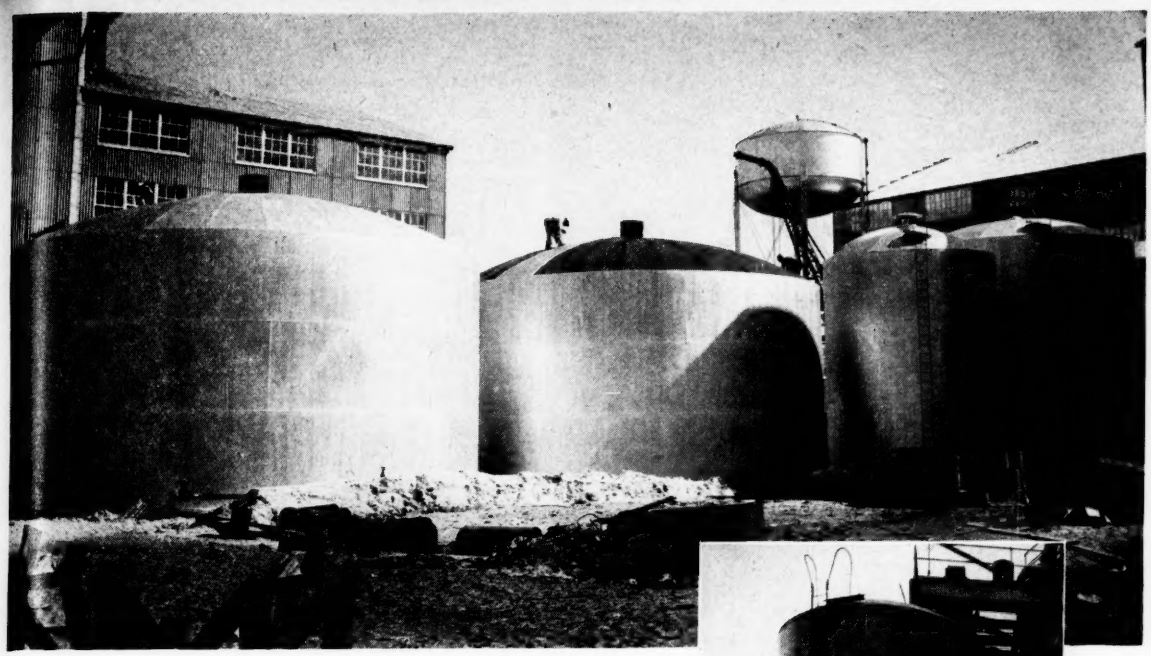
Under our democratic concepts, rights carry with them obligations. In the field of industrial relations, the public has rights, too, the right to demand that both labor and management exercise restraint in making use of the rights granted them by the social group as a whole. Abuse of those rights can only result in a strong demand for withdrawal or limitation by law of those rights, and if the demands are complied with, the results are deleterious not only to management and labor but to the sort of democratic system we are trying to maintain in this country.

Wages are the most important costs of production and therefore the most important element in prices—if all the wages are added up, from extraction of raw materials to finished products, wages amount to 75 per cent out of each final dollar for manufactured products—consequently, no matter how earnest government officials may be in attempting to divorce the two inter-related factors of wages and prices, it is axiomatic that to increase wages is to increase the costs of production.

The presence of profit for employers is the workers' only guarantee of employment and wages. Profit is far more important to workers than to owners, however falsely they are now persuaded to the contrary. The wages and salary payments to workers in America since the turn of the century have been twelve times as large as the dividend payments to corporate stockholders.

Notwithstanding that millions of men have been released from the armed services and the war material producing plants of the country, there is still no sign of actual unemployment. From every section come reports that manpower is badly needed in all lines of peaceful endeavor and that jobs are obtainable in every section of the country, from the smallest town to the greatest city. Of course some of this is due to the fact that boys who saw service abroad and who have been discharged are seeking a well-earned vacation before going back to work, and some of it is caused by a disagreement over wage scales and working conditions which have been considerably disturbed by the weakness of government controls and the fear of political punishment that obsesses the administration. Conditions that have arisen in the economic system in the country are having something of an

(*Continued on page* 12)



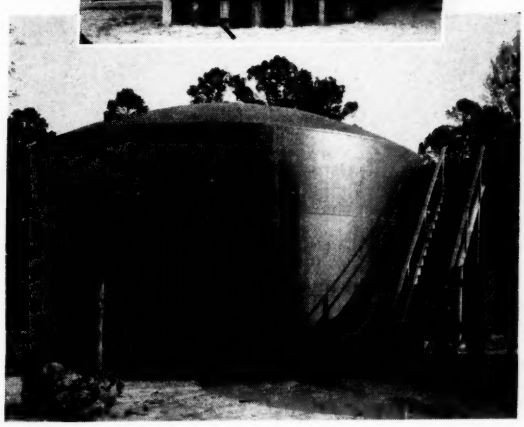
Nearly all Industry

can use flat-bottom Storage Tanks

AT one or more steps in the production lines of most industries, welded steel storage tanks are vitally important. We are equipped to fabricate and erect all types of steel tanks and plate work for this type of service.

The flat-bottom storage tanks shown on this page represent typical units for liquid storage which we have supplied to the paper industry. We are equally well qualified to meet the requirements of other industries.

In addition to flat-bottom tanks for water or chemical storage, we build elevated water tanks, standpipes and welded steel pipe. Address our nearest office for complete information or quotations.



Above: We erected this group of tanks at a Georgia mill. They include two tanks 30-ft. in diam. by 29 ft. and one tank 40 ft. in diam. by 20 ft., for liquor storage and a vapor tank 20 ft. in diam. by 25 ft. In the background is a 50,000-gal. elevated water tank.

Above Right: A 40,000-gal. hot water tank which we erected at a pulp mill in Florida.

* * * *

Right: A 40-ft. diam. by 20 ft. water storage tank providing suction for a fire pump at an Arkansas plant.

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Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

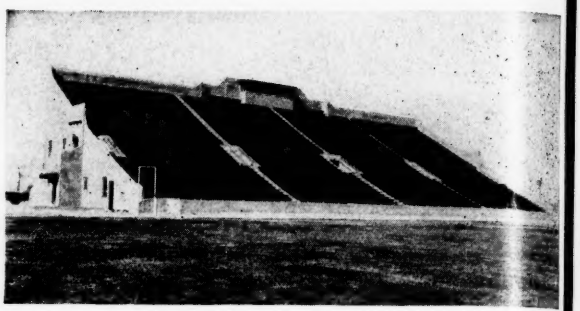
VIRGINIA BRIDGE

MODERN STEEL-DECK STADIUM-BUILDING

Economical—Safe—Durable

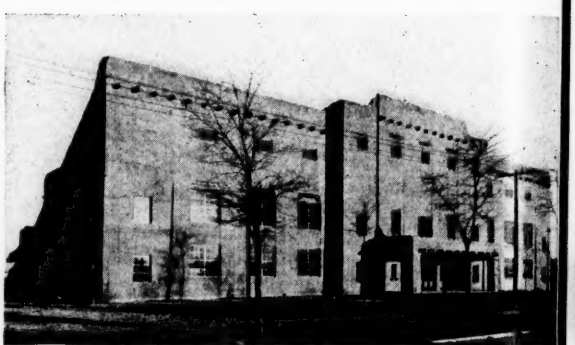
A glance at the "Stadium-Buildings" illustrated here will reveal the possibilities of these dual-service structures to provide both seating facilities and building accommodations at minimum cost. Supported on sturdy steel frames, Virginia Bridge patented watertight Steel-Deck construction performs double duty at maximum efficiency as Stadium Floor and Building Roof.

Enclosure walls at rear and ends can be brick, cement, stucco or other construction, with architectural treatment to suit local requirements. Virginia Bridge Steel-Deck stadiums are expertly engineered for greatest spectator comfort and convenience—also to meet specific local conditions, both physical and economic. Thus, they insure maximum utility and investment return over a long period as an occasional coat of paint keeps the steel decks like new indefinitely.



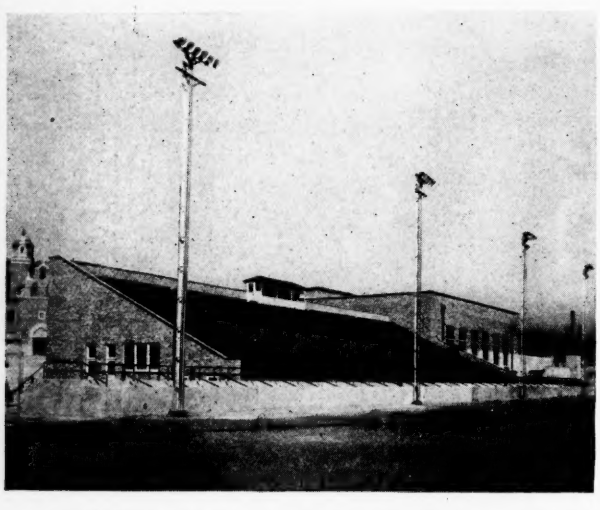
University of New Mexico Stadium
Albuquerque, New Mexico

Front View—Showing Stadium Seating Arrangement.



University of New Mexico Stadium
Albuquerque, New Mexico

Rear View—Showing a two-story building with classrooms, offices and other quarters adequately housed and lighted.



Austin High School Stadium, El Paso, Texas

3,130 stadium seats and building accommodating two classrooms, mechanical drawing room, manual training room and boys' athletic department. Total floor space equals that of seven average classrooms.

Literature describing the many unique advantages of Virginia Bridge modern Steel-Deck stadium construction will be sent you upon request.

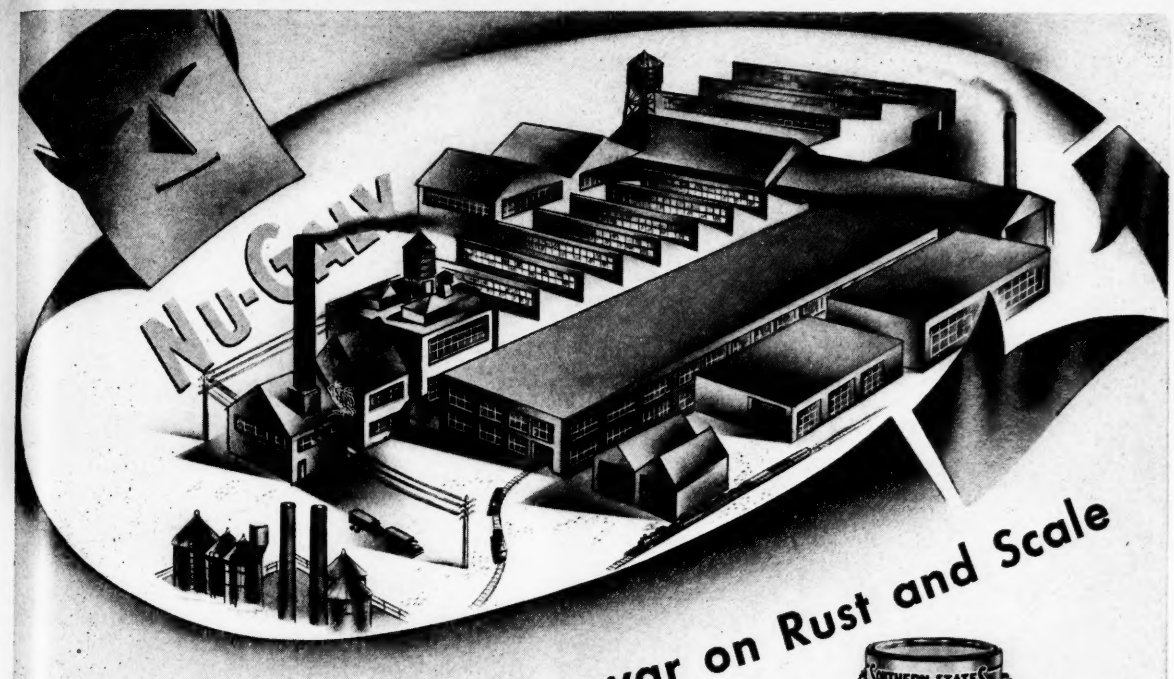
VIRGINIA BRIDGE COMPANY · USS STEEL · UNITED STATES STEEL

Virginia Bridge Company

Stadium Specialists for Over Twenty Years

ROANOKE BIRMINGHAM MEMPHIS NEW YORK ATLANTA DALLAS

UNITED STATES STEEL



Elastic defense in the war on Rust and Scale

A film of never-failing protection against rust. A rust-defense that stretches and contracts with weather and mechanical changes, but *never cracks!* That is Science's answer to the deteriorating attacks of metal's greatest enemy—rust.

NUGALV

The Protective Zinc Paint for Metals

Here is a *rust-preventer* . . . a rust-*"inhibitor"* . . . that renews metal surfaces. A single coat should add at least 5 to 7 years. A liquid "regal-vanizer," it may be applied equally well by spray-gun, brush, or by dipping. Each gallon of NUGALV contains fifteen pounds of pure zinc-dust, and gives amazing coverage . . . as much as 800 square feet per gallon. NUGALV will not crack or peel. It sticks as if welded, giving new life to metal surfaces. Even when abrasions have exposed small areas, NUGALV prevents them from rusting. This rust-inhibitor comes in attractive Battleship Gray finish, and may be used as a primer-coat for color-finishes.

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PREFABRICATED STEEL BUILDINGS: **Adaptable to a wide range of industrial uses. Write for booklet.**

GENERAL PAINTING: **A wide selection of superior interior and exterior maintenance paints and finishes.**

NUGALV

For long-term, metal-saving rust-proofing

1. NUGALV prevents rust by *inhibiting* it.
2. NUGALV adheres tightly to all metal surfaces . . . will not peel or flake.
3. NUGALV lasts twice as long! One coat should add at least 5 to 7 years of life; 2 coats up to 12 years.
4. Amazing coverage . . . best spreading-qualities . . . one gallon covers up to 800 sq. feet.
5. Attractive, long-lasting, non-fading Battleship Gray finish.
6. Easy to apply—brush, spray-gun, or dipping.

Send for interesting booklet on NUGALV.

Southern States Iron Roofing Co. MR12
P.O. Box 1159, Savannah, Ga.
Please send your booklet furnishing complete details on NUGALV.

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THERE WILL BE
SMOKE ON THE SKY
IN 1946

—Smoke that means new products for a Nation at Peace —smoke that means fulfilling the needs of some 130 million American citizens. Manufacturers have never before faced such a golden opportunity for tremendous sales volume and a ready cash market. But remember, Water will be one of your most important manufacturing necessities.

Now is the time to plan and put in a modern high efficiency Layne Well Water System—a system that will produce great quantities of water at an extra low cost. No investment you can make will show a greater dividend in savings and satisfaction.

In buying a Layne Well Water System you are obtaining the very finest made. You are assuring yourself of long lasting quality and trouble free operation.

If you wish counsel on preliminary plans for a Layne Well Water System, ask for the cooperation of Layne engineers, which is obtainable without obligation. For illustrated literature, address Layne & Bowler, Inc., General Offices Memphis 8, Tenn.

HIGHEST EFFICIENCY

Layne Vertical Turbine Pumps are now available in sizes to produce from 40 to 16,000 gallons of water per minute. Their high efficiency saves hundreds of dollars on power cost per year.

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. ★ Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Texas Co., Houston, Texas ★ Layne-Western Co., Kansas City, Mo. ★ Layne-Western Co. of Minnesota, Minneapolis, Minn. ★ International Water Supply Ltd., London, Ontario, Canada ★ Layne-Hispano Americana, S. A., Mexico, D. F.

LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

(*Continued from page* 8)

atomic bomb effect on business and industry which are anxious to have the way cleared for a prosperous peacetime.

We have planners scattered among us making speeches, writing books, teaching our children the easy ways of deficits and debts; who speak of 60 million jobs guaranteed by government if private business doesn't make them.

Isn't it time to tell the truth that the United States cannot borrow money to employ citizens? Can a father borrow money to employ children?

Government is an association of citizens. We own it. There are no resources other than our own. There is no such thing as a 'federal grant to states,' because the money comes from the states and is collected in the states. Subsidies in any form are the people's money.—Harry F. Byrd, United States Senator from Virginia.

As Higgins points out, industry "submitted to indignities and arbitrary contradictions during the war," much of it the result of political opportunism. The closed shop was thrust on industry and workmen by the War Labor Board in the disguise of "maintenance of membership." Unions were encouraged to harass industries like Weirton Steel, which never before had labor troubles. Jurisdictional wrangles between A. F. of L. and C. I. O. were permitted to further snarl the situation. Now that the war is over, all of these evils not only have survived, but have been intensified, by the governmental policy of encouraging wage increases without permitting any increase in selling prices.

Where war production continued along pre-war lines (steel, lumber, coal, and many others—altogether 23 industries), average productivity went down 3 per cent from 1941 to 1943, and more since. Mainly responsible for that decline was the influx of untrained workers into the wartime labor force. But whatever the explanation, fact is that a decline in productivity can hardly be said to prepare industry to absorb higher wage costs.

How can we with logic, candor, or justice tell people they must buy war bonds because too much purchasing power is threatening inflation, and at the same time call for injection of more purchasing power through government spending and wage increases on the theory that it is needed to avert deflation?

It is time the people of this nation, acting through their government, paid less attention to management and labor and more attention to the rights of the individual citizen and to the things which have made his lot the happiest and most prosperous in the history of the world. It is time for organized minorities to be made to understand that they cannot interfere per-

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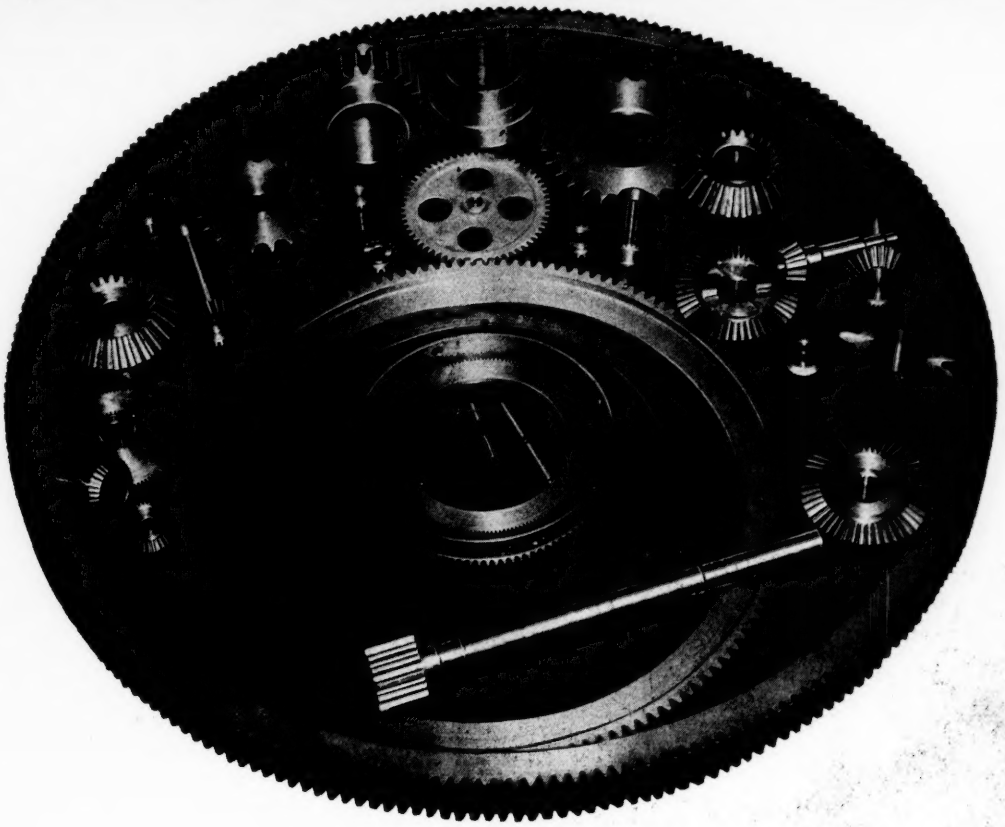

GEARS
IN GREAT VARIETY

You will recognize the precision gears pictured above in wide variety . . . from the 36-inch ring gear for gun turrets to the tiny camera-operating gears. Between these are aileron "flipper" gears, bomb bay mechanisms and cargo hoist gears. ALL made for accuracy and durability by SLAYSMAN. Our industrial gear manufacturing facilities have been greatly increased to supply the demand for our varied services. A newly instituted Slaysman service is that of aeronautical gearing and transmission bringing you the newest designs in wide variety. Let us hear from you. We'll be glad to help you with your power transmission problems.

THE SLAYSMAN COMPANY

Engineers • **MANUFACTURERS OF INDUSTRIAL GEARS** • ***Machinists***

801-813 EAST PRATT STREET
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Making MECHANICAL TUBING *to Precision Standards*

With the aid of LINK-BELT CHAIN DRIVES

Emerging from a Yoder Tube Mill (arrow) is a length of welded steel pipe, automatically produced from a steel strip. This ingenious machine prepares the strip, forms, welds and straightens the tube at an exact rate of speed, and an associated machine cuts it to predetermined lengths "on the fly." Power at the precise speed required, is transmitted through Link-Belt roller and silent chain drives.

UNDER the English Channel and half-way across the continent, hundreds of miles of welded steel pipe served as arteries conveying the precious fuel for our mechanized armies of invasion. Much of this pipe was produced on Yoder tube mills, similar to that illustrated above. This particular unit welds low and medium carbon steel tubing, ½" to 4" O.D. at speeds up to 90 ft. per minute, or stainless and high alloy steel tubes from ½" to 3" O.D. at speeds from 10" to 40" per minute. Power is provided by a D.C. motor with 4 to 1 speed range, and a Link-Belt double jaw clutch engages either a low speed drive through a Silverlink roller chain and Link-Belt herringbone gear speed reducer, or the high speed drive through the Silverstreak silent chain. Link-Belt roller bearings, couplings and several other speed reducers and roller chain drives are used on other sections of this tube mill.

Where the most efficient transmission of power, at precise speeds and with negligible maintenance is demanded, Link-Belt offers silent and roller chain drives, speed reducers, speed variators and other units of proven quality and over-all economy. Send for comprehensive data books, today.

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10,078-A

LINK BELT *Silent and Roller* **CHAIN DRIVES**

Lithographed on stone by Edward A. Wilson

Illustration shows installation of cast iron flexible joint subaqueous pipe line specified for the required service conditions. How to do it when you get the go-ahead is a problem we are always glad to help out on if it involves pipe design, or recommendations as to pipe and fittings which have successfully met similar problems. To see that our product is correctly specified for the purpose intended is an important function of our sales engineering and technical staffs. Forty-five years' experience as largest producers of cast iron pipe is behind them and always at your service.

U.S.
cast iron
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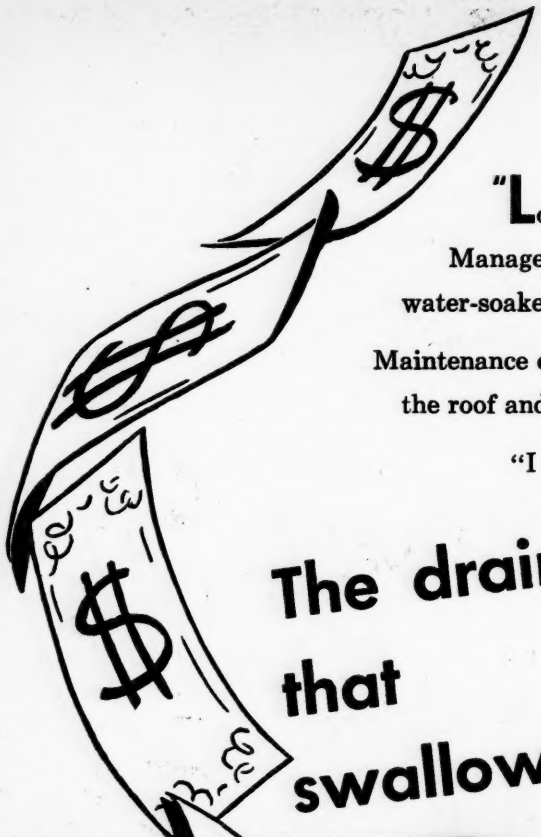

The drain that swallowed dollars

"Look at that merchandise," groaned the General Manager. "It's a complete loss—every single carton is water-soaked."

Maintenance came up punching, "Only last week, I checked the roof and found it perfectly sound . . ."

"I suppose you think this water damage is deliberate sabotage?" asked the G.M. scornfully. "I suggest we have an expert opinion."

The Maintenance Engineer sent for the Barrett Approved Roofer. In next to no time the solution was found. A clogged roof drain caused a backwash that had finally seeped through the ceiling . . .

This is typical of many cases of "roof troubles". Clogged drains, damaged flashings, defective masonry may be the cause when the roof itself is sound as a nut.

These hidden weaknesses are often difficult to trace. Why risk trouble and expense when your Barrett Approved Roofer will gladly give you the benefit of his skill and experience in the care and protection of your roof? Call on him and his staff today for a *thorough* check-up on the condition of your roof. You can save time and money by taking this precaution now.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
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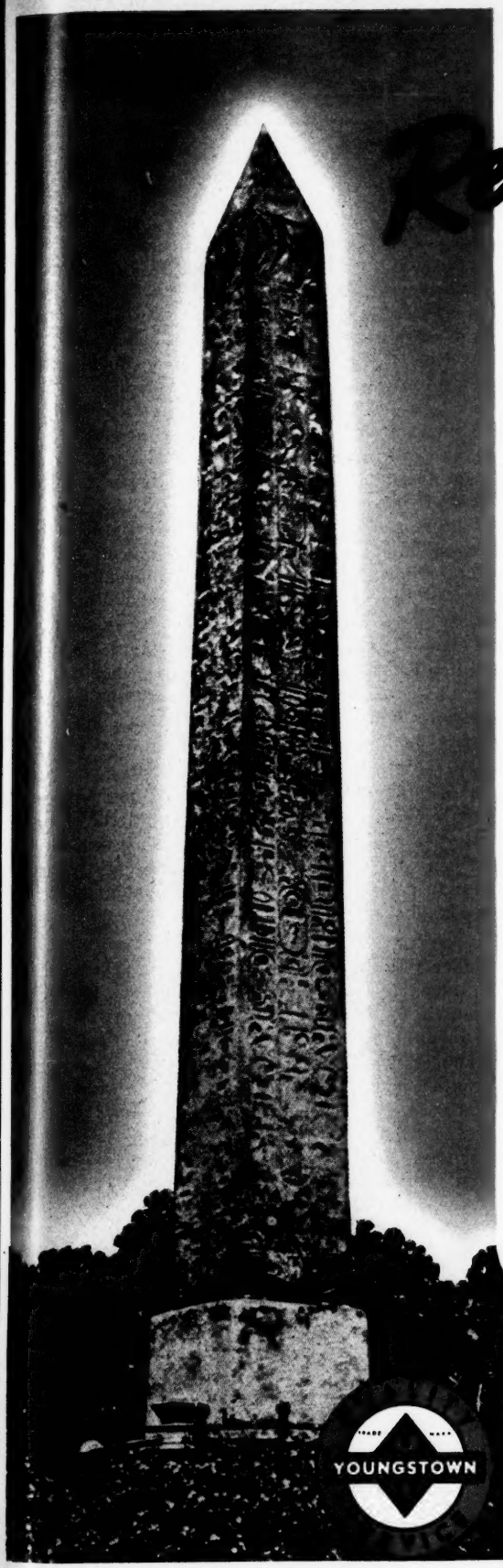
2800 So. Sacramento Avenue, Chicago 23, Ill.
Birmingham, Alabama

***BARRETT MATERIALS AVAILABLE FOR WARTIME NEEDS.** If you're building a new plant or reconditioning warehouses or other buildings, use dependable roofing materials and methods. Barrett Pitch and Felt are non-critical, and are readily available through your local Barrett Approved Roofer. Consult with him or with us on any roofing problems.

Barrett Specification* Roofs

*Trade-mark Reg. U.S. Pat. Off.



Record of a Past..

that knew no steel

ALMOST in the shadow of the world's tallest man-made structures stands this stone obelisk--"Cleopatra's Needle," in Central Park, New York. Its hieroglyphs boast of a glory that faded 3000 years ago.

If we deciphered these inscriptions, we would look in vain for the word Steel. Ancient Egypt hewed its monuments with tools of bronze. But bronze, then as now, was not plentiful enough to go far toward improving the lot of man.

What would our civilization be if we were deprived of steel? We might have monuments of stone. but no Radio City, no towering apartments or hotels, no modern hospitals, schools, or factories. For to sustain human life and human activity, we must have vast quantities of pure water and adequate sanitary facilities...from top floor to basement...provided only through miles of steel pipe. We must have quick, safe vertical transportation, possible only with steel elevators. We must have heating systems, production machines, equipment of a hundred kinds, available in the abundance which steel alone makes possible. In short, the difference between our civilization and that of the ancient world is expressed in terms of steel.

America stands on the threshold of a New Steel Age--with steels being given new characteristics and new virtues by metallurgists and chemists. Youngstown is ready to supply alloy steels as well as carbon steels--in sheets, tinplate, pipe, conduit, bars, wire, rods and shapes--to meet your needs in fabricating the products of peace.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN 1, OHIO

Export Office . . . 500 Fifth Ave., New York

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Pipe and Tubular Products-Sheets-Plates-Conduit-Bars-Electrolytic Tin Plate-Coke Tin Plate-Rods-Wire-Nails-Tie Plates and Spikes

South Carolina says "welcome to new business"—with moderate taxes, lower-than-average power rates, capable workers, genuine cooperation everywhere. Eastern and midwestern markets are easily, quickly accessible by rail, highway, water and air. Ten million acres of forest, extensive mineral deposits, abundant water, a rich agriculture, are here for use and development. Let us make a complete, professional study of how your business can prosper in South Carolina. Write: State Research, Planning and Development Board, Dept. E, Columbia, South Carolina.

South Carolina

WHERE RESOURCES AND MARKETS MEET

(*Continued from page* 12)

manently with "the greatest good for the greatest number."—Thurman Sensing.

Example of the equivocal support offered for increased wage demands without raising prices is seen in Labor's claim that worker per hour productivity was increased during the war. This assertion is based on two fallacies. On the one hand it considers only the worker in vital war industries. Efficiency did increase there. It could not have done otherwise. Starting from scratch, initial efficiency was necessarily at its lowest ebb—and it was a truly low ebb as any who spent time in the earliest war effort can attest. It could go only one way and that was up. In civilian production activities, on the other hand, in which a high stage of efficiency had been attained before the war, surveys reveal that unweighted averages of 21 of these industries now have an output per man-hour at least four per cent lower than in 1941. This has been brought about by Union seniority policies that disregard talent and productiveness in scaling workers up or down and prohibit the displacement of incompetent workers recruited of necessity during periods of manpower shortage. Another factor fostering inefficiency is the growing laxity in plant discipline by Union encroachment in the sphere of management through the aid and support of government labor relations agencies.

This must be remembered—at the end of one year after reemployment a veteran will become subject to all of the conditions of employment which apply to employees generally. Thus, where there is a closed shop contract, a union, after the year is up, could refuse to accept the veteran as a member and thus cause his discharge.

Under a free economy supply-demand relationships are uncontrollable and unpredictable. For that reason, if for no other, price-control, price-support and unemployment budgets must fail of effectiveness. To some this may seem an evil: To thinking men it presents a boon. Flexibility is a virtue. Standards of living are gauged by productivity. Flexible prices and wages, flexible supplies of manpower and commodities admit of adjustments essential for full productivity. Declines in prices warn to limit output of oversupplies; advances urge increased production.

It is estimated that between 1914 and 1933 the total amount owed to the United States for goods and services sold or sent abroad was $101 billion dollars, while the total that we owed for goods and services received from abroad was $75 billion.

"The net result," says Stuart Chase in a special report issued by the Twentieth Century Fund, "was that America gave the world $26 billion more useful stuff than was returned to her . . . The ratio runs about four to three. That is not a very healthy ratio. For a businessman it would mean sales of $75 against costs of $100. How long would he last?"

(*Continued on page* 22)

WATER WORKS ENGINEERS

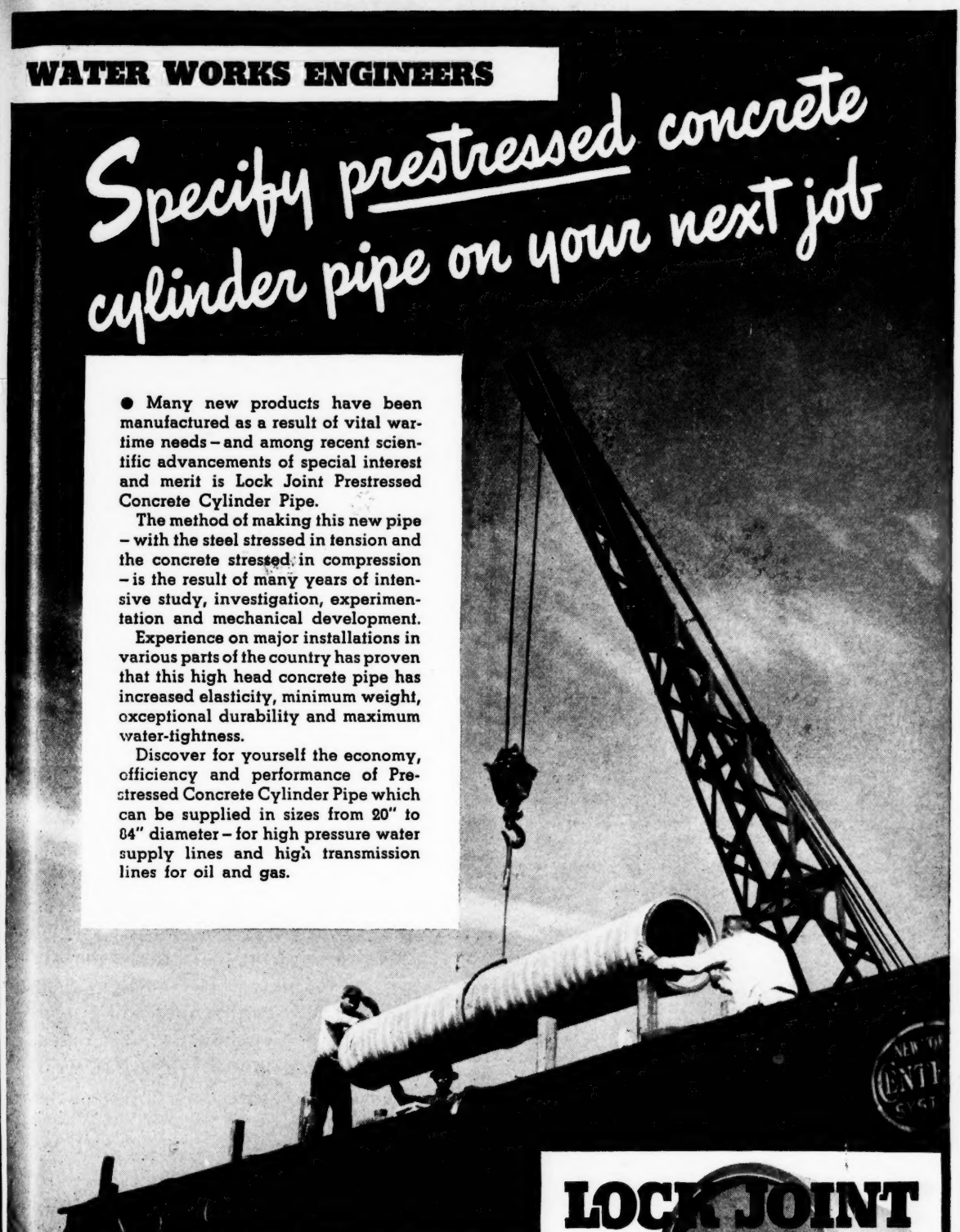
Specify prestressed concrete cylinder pipe on your next job

● Many new products have been manufactured as a result of vital wartime needs – and among recent scientific advancements of special interest and merit is Lock Joint Prestressed Concrete Cylinder Pipe.

The method of making this new pipe – with the steel stressed in tension and the concrete stressed in compression – is the result of many years of intensive study, investigation, experimentation and mechanical development.

Experience on major installations in various parts of the country has proven that this high head concrete pipe has increased elasticity, minimum weight, exceptional durability and maximum water-tightness.

Discover for yourself the economy, efficiency and performance of Prestressed Concrete Cylinder Pipe which can be supplied in sizes from 20" to 84" diameter – for high pressure water supply lines and high transmission lines for oil and gas.



LOCK JOINT PIPE COMPANY

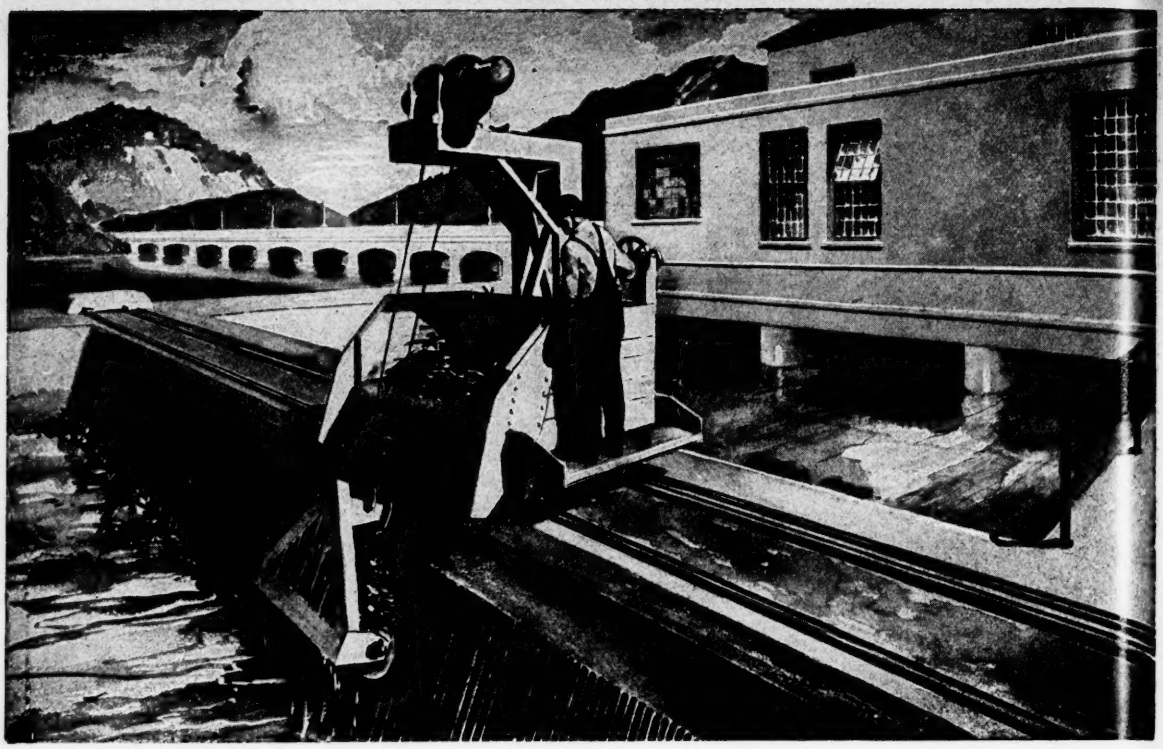
Established 1905

P. O. BOX 269, EAST ORANGE, N. J.

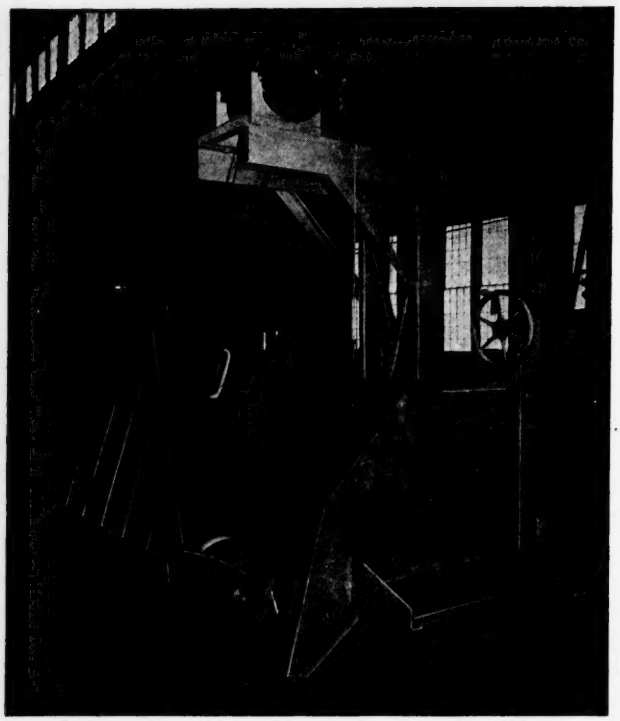
Denver, Colo. · Chicago, Ill. · Kenilworth, N J · Kansas City, Mo. · Rock Island, Ill.
Joplin, Mo. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*

LOCK JOINT *Reinforced Concrete* **PRESSURE PIPE**



LEONARD Trash Rack Rake

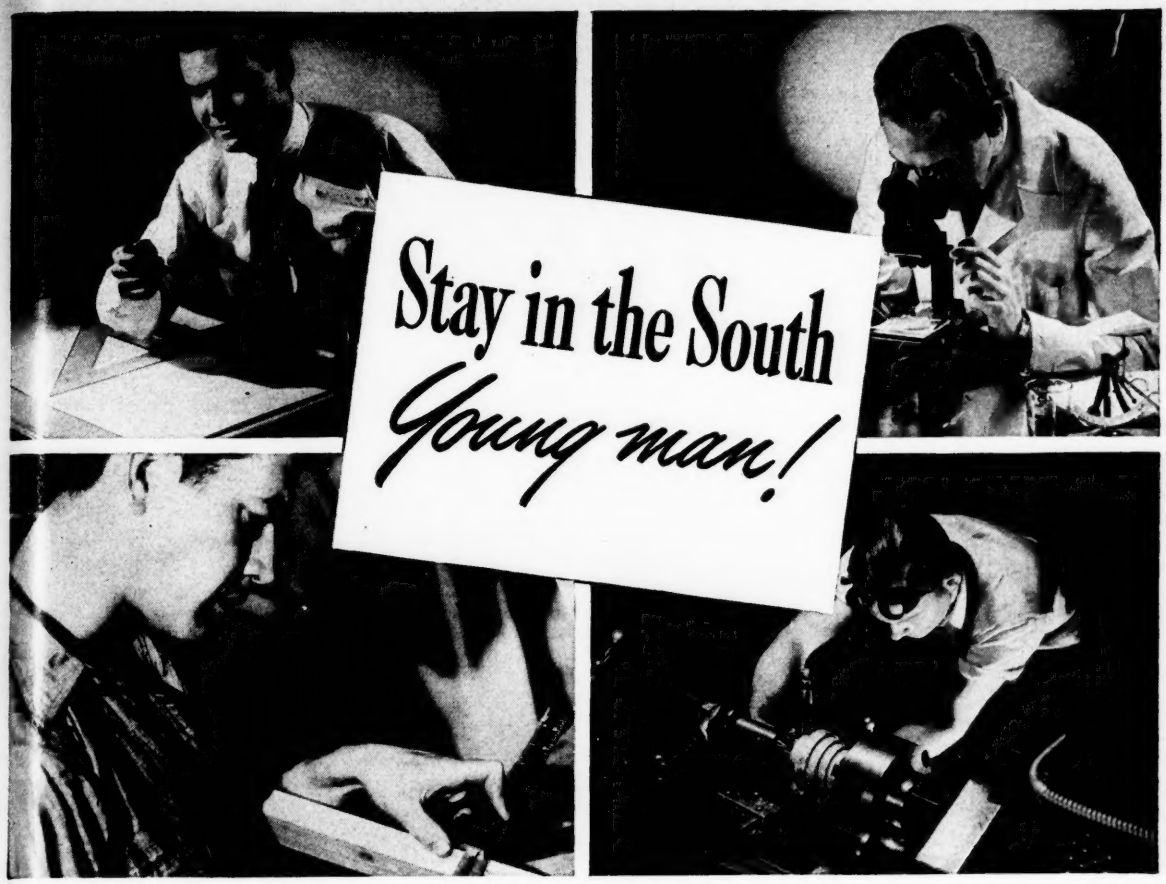


A VITAL piece of equipment in any water power plant or pumping station. Eliminates loss of power by reducing head losses through the rack by keeping intakes clear. Simple in design and construction, yet positive in action, the Leonard Rake consists of a series of teeth mounted on a tubular axle, with wide, heavy wheels. The teeth ride over obstructions on the downward course, and turn, in reverse, to rake the rack clean of submerged or floating debris and deposit it in a trash car, when raised. Keeps intakes clear and eliminates loss of head due to clogged racks.

If It's Hydraulics—
Put It Up to Us!

S·MORGAN SMITH COMPANY
·YORK·PENNSYLVANIA·U·S·A·

POWER by SMITH



The South is the New Land of Opportunity!

By all the signs, the South is just beginning a period of development unique in its history. It took the war to dramatize the many advantages of the South as an industrial region—to convince the nation that Southerners can produce.

Hard pressed for war materials, manufacturers discovered that the mild southern climate favored fast, economical construction, efficient operations and high production levels. They realized the value of the 81,000 mile network of southern railroads and the convenient coastal shipping terminals for water transportation. In war-born plants and factories, loyal Southerners acquired the methods and techniques necessary to industrial operations.

But most important of all, there is a market. Larger urban populations and increased payrolls provide rapidly growing buying power. The trend toward diversified farming is boosting the income of southern farmers, raising their standard of living and giving them a purchasing power greater than they ever had before. The need for new tools and equipment and the desire for modern conveniences assure a demand for manufactured products for home and farm use. Yes, both industrially and agriculturally, the South seems destined to become a new land of opportunity.

In peace—as in war—the Tennessee Coal, Iron & Railroad Company has played a vital part in the development of the South. Centrally situated in an area containing all raw materials necessary for making steel—the huge capacity of T.C.I. mills provides a convenient source for quality steel to manufacturers who locate in the South.

U·S·S Steel Products manufactured in our mills include:

- Rolled, forged and drawn steel products
- Structural shapes, plates, bars, small shapes, agricultural shapes, tool steel, strip, hoops, cotton ties.
- Black, galvanized and special finish sheets.
- Wire and wire products.
- Reinforcing bars.
- Rails, track accessories, axles and forgings.
- Culverts, Panelbilt prefabricated steel buildings, cold-formed steel sections.
- U·S·S High Strength Steels and U·S·S Abrasion-Resisting Steels.
- Semi-finished products, pig iron and ferromanganese.

UNITED STATES STEEL *Presents* THE THEATRE GUILD ON THE AIR *Every* SUNDAY EVENING AMERICAN Network (Blue)

USS STEEL UNITED STATES STEEL

TENNESSEE COAL, IRON & RAILROAD COMPANY

Birmingham, Alabama

United States Steel Export Company, New York

UNITED STATES STEEL

COTTON, unlike petroleum, minerals and many other basic raw materials, is an ever-renewable resource. Grown annually in a large volume, by farmers experienced in its production, Cotton Lint and Seed provide a dependable, efficient source of universally-needed Cellulose, Protein and Vegetable Oil.

In the new era of chemical progress, Cotton and Cottonseed, the world's first "chemurgic" crops, offer unexcelled opportunities for research and new industrial products. Cotton Linters — "the richest known commercial source of chemical cellulose which is converted with greater ease into more useful articles than any other cellulose yielding material" — offer an especially fertile field for postwar chemical industries.

For industry, as for agriculture, Cotton and Cottonseed products offer a sound base for building for the future.

Educational Service
NATIONAL COTTONSEED PRODUCTS ASSOCIATION
INCORPORATED
618 Wilson Building Dallas 1, Texas

COTTON
The Crop with a Future

(*Continued from page* 18)

Nine hundred thousand jobs in aviation, direct and indirect, is the conservative prediction for 1955—six times the 1939 total. Manufacturing is expected to account for half the jobs, with the rest in airlines, feeder lines, airports, and similar industries. Almost two-thirds of the jobs will be connected with civilian activities, the rest with military.

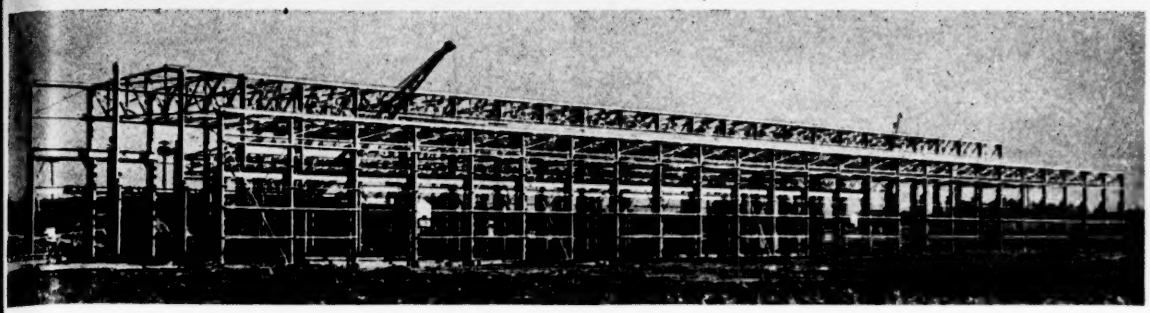
One of Florida's major fruit-juice canneries which is said to produce more canned citrus juices in two months than all of California turns out in a season finds citrus products valuable for other purposes than human consumption. While transforming 5,000,000 boxes of citrus fruits into canned products, the firm also turns out 80 tons of livestock feed a day from peel and almost 125 tons daily of citrus molasses for chemurgical purposes. The huge plant embraces 13 acres under roof and new buildings are scheduled for construction as soon as materials and manpower become available.

Throughout the world today—and our own country is not immune—there is a growing trend toward socialistic or collectivist doctrine. This doctrine, in effect, denies the integrity of the individual. It places responsibility upon an abstraction called "the state." The state would assume responsibility for guiding the affairs of individuals and would "plan" production and distribution. In effect, the state would make all of the daily decisions which keep our modern complex production and distribution system operating. It is a noteworthy fact, however, that this scheme of centralized state control has yet to prove that it can meet the peacetime needs of a nation. In my opinion the point will never be proved—simply because the state is and can be only force or coercion. Coercion cannot be creative; it is essentially destructive. Only in voluntary action can there be creativeness. — Donaldson Brown, Vice Chairman, General Motors.

This is how wrong Government and labor officials were in their guesses on unemployment: the War Manpower Commission estimated that unemployment in the last quarter of this year would be 5,000,000; the Social Security Board's guess was between 5.5 and 7.5 million; the AFL had expected 3.8 million by September and 8 million by March, and the CIO-UAW chief, R. J. Thomas, told a Senate committee August 30 that by December 31 unemployment would surely be more than 12,000,000.

The startling fact is that almost three months after the end of the war, unemployment was found by the Bureau of the Census to be 1,520,000 in October, a decrease of 130,000 from September. And the great shift of workers from war industry is conceded to be almost complete.

In this connection the Bureau of Labor Statistics reported that even in September lay-offs in manufacturing dropped by 1,000,000 and the hiring reached its peak since June, 1944.



Ordnance Plant, Gadsden, Alabama
—a typical industrial building.

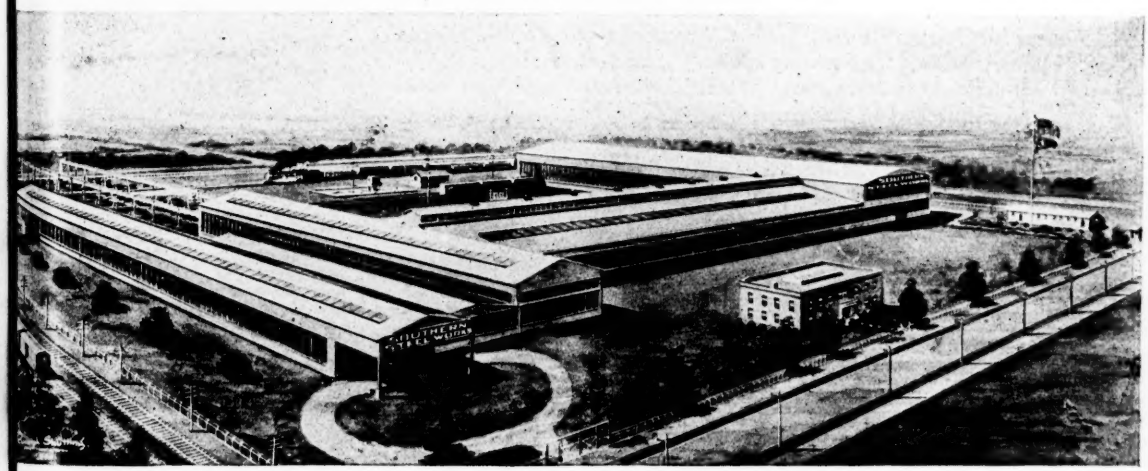
The South is Building

All over the South there is need for building, and all over the South the building program is getting under way. Of course, there are still shortages in material and labor; but they are expected to ease up in the near future.

Steel to Build with

The Army-Navy "E" with two stars was awarded for quality and speed of production.

For the many larger buildings—those requiring sturdy construction, those with wide, open areas—we are equipped to produce the steel specified. Also, with our staff of experienced engineers, we are equipped to advise and aid in the planning and figuring of jobs. We are eager to get building going full speed ahead throughout the South.



The most modern steel fabricating plant in the South—built 1942.

SOUTHERN STEEL WORKS

KIRKMAN O'NEAL, *President*

Offices: 745 NORTH 41st STREET, BIRMINGHAM, ALABAMA

Is your office full of "SPLIT PERSONALITIES"?

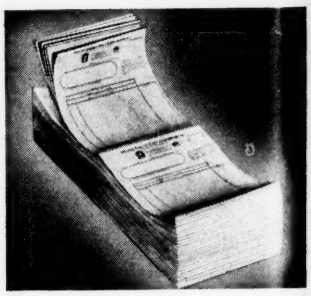
• Ten to one it is! For if your employees must spend time doing unnecessary routine jobs trying to get ready to work—you have "split personalities"—employees forced to split your time and their ability between jobs that matter and unproductive paper rustling.

The cause? Often it's the forms used. Old-fashioned forms that haven't progressed with modern business efforts. Forms that require handwork, carbon stuffing, positioning and other time-wasting jobs that should have been eliminated by design.

Too often, forms are regarded as mere adjuncts to routine. If this is your case, check the forms you use. Then you may be interested in what UARCO has to show you. For UARCO has made a science of creating better forms . . . forms for the individual business that pay off in savings of time and money . . . forms that simplify and speed work.

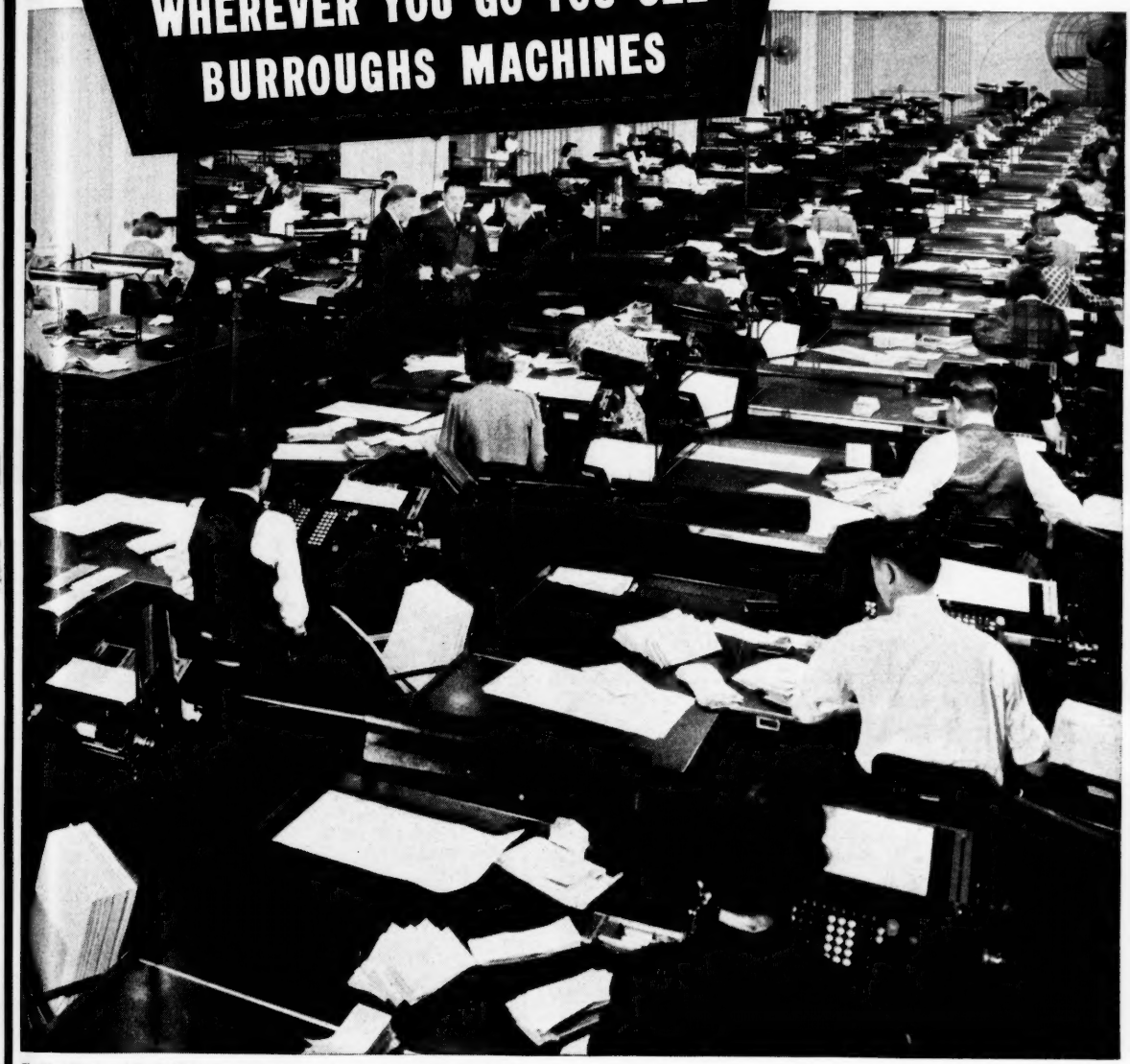
Spend a half hour with a UARCO representative. You'll be amazed at the substantial saving of time the right form will bring you. Call in today—or write.

UNITED AUTOGRAPHIC REGISTER COMPANY
Chicago, Cleveland, Oakland • *Offices in All Principal Cities*



For instance, **UARCO Multi-fold Carbon Set forms. These forms can be used in regular billing and bookkeeping machines, or can turn any standard office typewriter into a continuous forms machine. They are perfectly aligned—carbon filled—consecutively numbered. This particular form offers amazing flexibilities of uses—provides legible, clean copies. For further information, write today.**

WHEREVER YOU GO YOU SEE BURROUGHS MACHINES



The First National Bank, Chicago—like thousands of other banks throughout the nation—speeds checking account posting with Burroughs machines.

1st **Burroughs**

IN MACHINES
IN COUNSEL
IN SERVICE

Step by step, for more than fifty years, Burroughs machines have developed with the needs of business and industry. Bookkeeping, accounting, calculating, statistical, cash handling and other types of machines have come from Burroughs as specialized business needs have developed through the years. Today Burroughs' wide range of machines is serving practically every known need of modern business for time-saving figuring and accounting machines—and matching each need with the specific type of machine to do the required work efficiently. That's one big reason why you see Burroughs machines wherever you go.

BURROUGHS ADDING MACHINE COMPANY, DETROIT 32, MICHIGAN

FIGURING, ACCOUNTING AND STATISTICAL MACHINES • NATIONWIDE MAINTENANCE SERVICE • BUSINESS MACHINE SUPPLIES

LOCATE

YOUR NEW PLANT

in Mississippi

where local people have faith enough in their own communities to invest their money in a building for your industry

The people of Mississippi are aware of and interested in the industrial utilization of their resources. Practical, helpful legislation—lowered taxes—community financing of industrial buildings—are among the contributions of Mississippi citizens.

We welcome the opportunity to show you why your new plant will prove more profitable in Mississippi—a debt-free State. Your inquiry will be held in strict confidence.

AMERICA'S STATE MISSISSIPPI OF OPPORTUNITY

MISSISSIPPI

AGRICULTURAL AND INDUSTRIAL BOARD

NEW CAPITOL BUILDING • JACKSON, MISSISSIPPI

Southern Mineral Production

Mineral production of the South for 1944 was valued at $3,371,099,000, nearly 47 per cent of the total for the United States, according to a recent report by Dr. R. R. Sayers, Director of the Bureau of Mines, U. S. Department of the Interior.

In 1900 the value of the entire mineral output of the country was $1,808,906,000, the South contributing less than 7 per cent, or $129,857,000, to the total. By 1910 the mines and oil wells of the South were producing at an annual rate of $369,677,000, or little more than 17 per cent of the overall.

The next two decades, to 1930, saw the South's annual output of minerals reach a little less than $2 billion, or $1,935,097,000, the total for the nation being $4,646,479,000.

War's insatiable demands for oil, natural gas, coal and metals jumped the country's output of minerals in 1941, 1942, 1943 and 1944, during which years production reached all-time peaks, each year being greater than the preceding one.

Mineral resources of the southern states have a position in the economy of the United States that insures the stability of their markets. Whether the factories of the nation toil for the war god Mars, or whether they produce for a world at peace, it is to the South that they must look for a major portion of their critical supplies.

Bauxite, basic ore of aluminum, the light metal which appears in another new article daily, is almost exclusive with the South. Sulphur, raw material for the manufacture of sulphuric acid which has more chemical and industrial uses than any other liquid, water excepted, is produced in only two states of the Union, Texas and Louisiana.

Bituminous coal, great source of heat and power, is another valuable mineral asset of the South, more than 50 per cent being mined below Mason and Dixon line. Petroleum from Dixie comprises almost sixty per cent of the nation's supply, while natural gas and raw material for carbon black, abounds in the region.

Building stones, from classic marble down to common limestone and gravel, are stored in the hills and valleys of the South in sufficient quantities to supply every family in the world with a five-room stone residence and to pave all the highways and streets of this country and of our neighbor to the North, Canada.

Iron ores of the South have brought great steel mills to the area, enlarging the South's industrial structure, and as the mines of the Great Lakes region approach exhaustion the mines of the southern states will step into the breach, assuring an adequate supply for the heavy industries of the nation.

Cement, lime, salt, sand, gravel, Fuller's earth, graphite, bentonite, helium — exclusively a southern mineral—asphalt; all of these and dozens more are found in the South, and the remainder of the nation becomes increasingly dependent on the southern states for the minerals of industry.

LIKE A CHAMPION SKATER

FORM-SET ROPE IS *relaxed*

Ever watch a truly great skater? Ever watch him rocket down the straightaways, glide around the turns? He's graceful, swift, sure . . . a study in balance and smooth endurance . . . because he's *relaxed.*

You'll find much of that same relaxed quality in Bethlehem Form-Set rope. Form-Set rope is preformed; each wire and each strand is molded to its final helical shape before being laid in the rope. In this way many internal stresses and strains are relieved. Since the wires and strands are preshaped into their final form, they have no nervous urge to straighten themselves out. They do not fight to uncoil. The rope is *relaxed.*

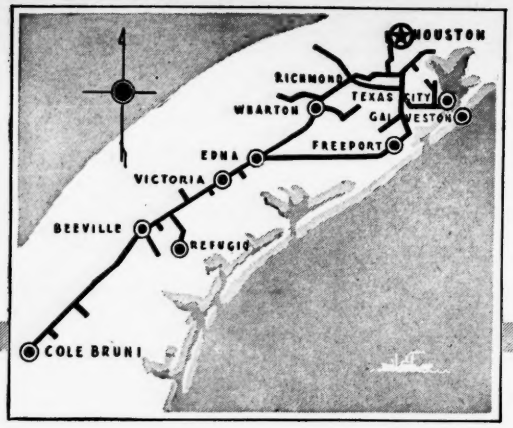
Cut a section of Form-Set rope. You'll notice that not a single wire or strand pops loose from the rope. They all lie smoothly in place. To get them apart, you actually have to lift them out with your fingers.

What is the advantage of this *relaxation*? Clearly, it means easier handling. But more important still, it promotes *longer life* on jobs where bending fatigue is a serious item—and this includes practically all operating ropes.

Bethlehem furnishes every grade, size, and type with the Form-Set construction . . . the feature that *relaxes* wire rope.

Why a Form-Set (preformed) rope is relaxed. Preforming "sets" the wires and strands in their helical permanent shape, so that they have no tendency to fly apart, even when cut or broken.

When you think WIRE ROPE . . . think BETHLEHEM



You must consider the Industrial Advantages of the TEXAS GULF COAST

The heavy movement of industry to the Texas Gulf Coast Country makes it imperative that your company consider this region for plant expansion.

The almost limitless variety of its raw resources, including asphalt rock, bentonite, caliche, cattle, carbon black, cotton, cottonseed, cotton linters, Fuller's Earth, helium, mohair, natural gas, oyster shell, sulphur, and wool — in each of which Texas leads the United States — has been a deciding factor for many industries which are building new plants here.

Others have moved to the Texas Coast because of the vast pool of native-born labor, with skills acquired in numerous war plants; these men and women are available for the making of peacetime goods. Nearness to markets in the Southwest and in South America, and unexcelled transportation and export facilities to other markets have influenced companies chiefly concerned with marketing and transportation problems.

And industrial leaders from colder climates have been quick to see the unique advantage of a year-round mild climate which results in lower construction costs, elimination of many heating problems, and the ability to work 365 days in the year in the open, if desired.

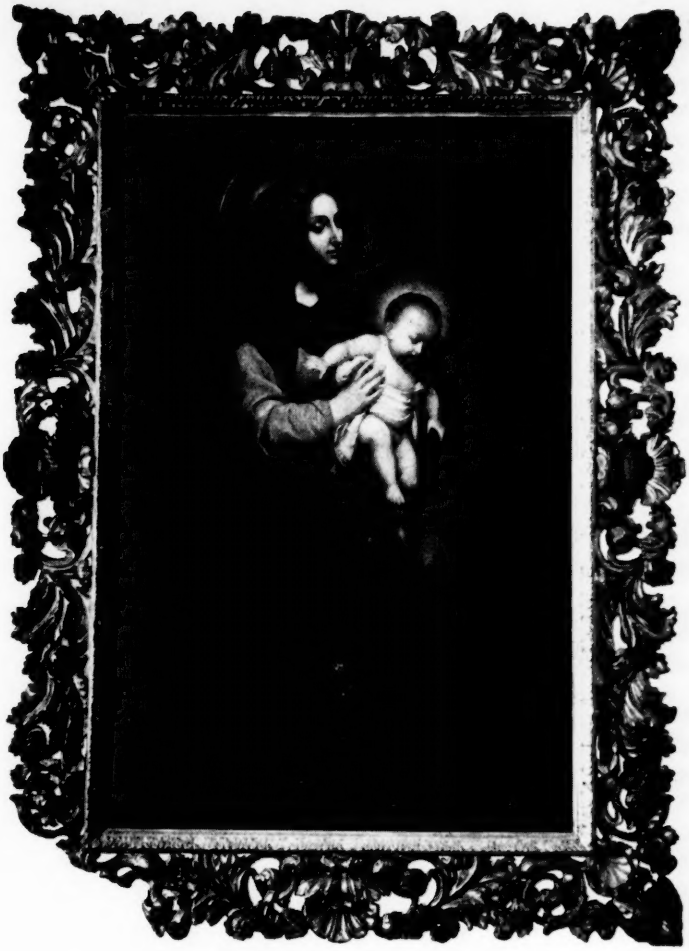
For those companies interested in having detailed facts about the Texas Coast Country's unique advantages and raw resources, our Research Department will prepare a survey without cost or obligation. Since each company's needs differ, each survey is highly individualized, strictly confidential. Address your request to Research Department, Houston Pipe Line Company, P. O. Box 2412, Houston 1, Texas.

HOUSTON PIPE LINE CO.

Subsidiary of Houston Oil Company of Texas

GEO. A. HILL, JR., President

Wholesalers of Natural GAS



Florentine School, early 17th Century, reproduced from the original with special permission of the owner.

Peace on Earth . . .

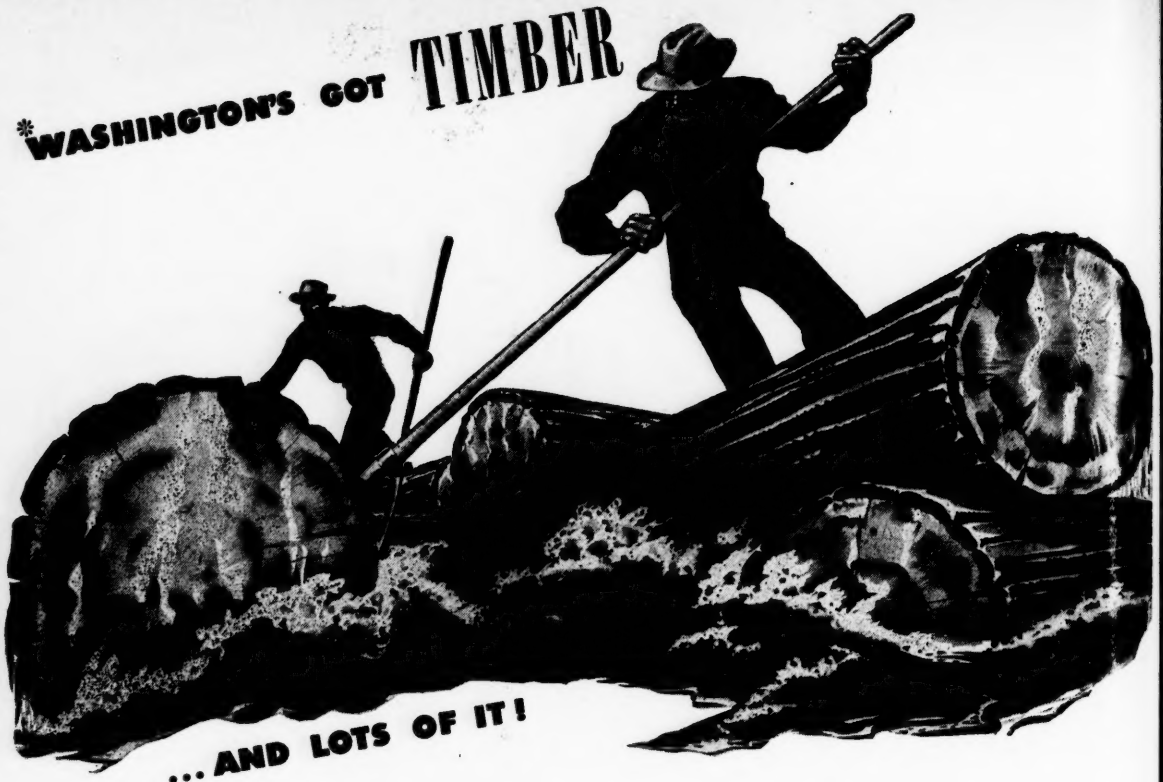
Never before have the strength and beauty of the Christmas ideal meant so much to the people of America. For this Christmas, after years of bitter, tragic war, our nation is at Peace.

For this great blessing, we give humble thanks. To our countrymen who fought and gave their lives in the cause of freedom and human rights, we owe a debt of everlasting gratitude. For them we bow in reverent tribute.

So, at this Christmastime, with thanksgiving in our hearts, we of America must face the future with faith and courage . . . and work together with determination and sustained devotion to the task of preserving the Christmas ideal — Peace on Earth and good will among mankind.

Norfolk and Western Railway

*WASHINGTON'S GOT TIMBER



...AND LOTS OF IT!

Natural resources mean new wealth! Take timber, for example. The vast forested areas of Washington State produce a great portion of the nation's supply of wood . . . for construction and for manufacturing, and an entire new industry is abuilding on the new technology of utilizing wood waste in strange and fascinating ways. This is only *one* item from Washington's deep unspent fund of natural raw materials. There are minerals, water power, fish, top quality livestock, grains, fruits, poultry and dairy products, and scores of raw materials and foods which added together spell: OPPORTUNITY UNLIMITED for new business and industry.

Add to all this Washington's cheap hydroelectric power, its skilled labor supply, its transportation and deep sea ports facing the fabulous markets of the Orient.

Men of industry, all this means: Westward Ho!

WASHINGTON
The New Cornerstone

WASHINGTON—*THE STATE*—HAS *EVERYTHING!

IMMENSE SOURCES OF RAW MATERIALS — *minerals, timber, fuels, water power, etc.*

SKILLED LABOR — *intelligent, responsible, fair in its dealings with management.*

ABUNDANT, CHEAP, HYDROELECTRIC POWER FOR INDUSTRY — *vast, interconnected hydroelectric systems.*

DIVERSIFIED AGRICULTURAL PRODUCTION — *fruits, grains, livestock, vegetables, dairy products.*

NUMEROUS BASIC INDUSTRIES — *provide materials for processing.*

UNEXCELLED TRANSPORTATION FACILITIES — *by land, sea and air . . . in all directions . . . deep-water harbors.*

INDUSTRIAL SITES AND HARBOR FACILITIES — *abundant industrial building sites on harbors, trackage and highways; available dock, terminal and warehouse facilities, anchorages, etc.*

GATEWAY TO THE GREAT POST-WAR PACIFIC MARKETS — *the Orient, Alaska, Russia, Canada, South America.*

PLEASANT LIVING—*a temperate, healthful climate, ideal for both working and living.*

LOW TAXES AND CONSERVATIVE FISCAL POLICIES — *definite, statutory limit on property taxes . . . no state income tax . . . no general obligation debt.*

PUGET SOUND POWER & LIGHT COMPANY • NORTHWESTERN ELECTRIC COMPANY
PACIFIC POWER & LIGHT COMPANY • THE WASHINGTON WATER POWER COMPANY

Business-Managed Electric Companies, Serving Low Cost Electricity to More Than 370,000 Homes, Farms, Businesses and Industries in the State of Washington

A 96 YEAR TREND BACKS LOS ANGELES' GROWTH

SINCE the days of '49, people have been heading West... *and they still are.*

The continuing shift of population to the West has dual importance to manufacturers: markets are moving West and labor supply is moving West.

For example, while every other geographic section of the Nation was sustaining a population loss during the 1940-1943 years, the Pacific Coast states showed a civilian population gain of 13.3%.

Example 2: From 1943 to 1944, *after* the peak of war industry migration had been reached, California's population gain of 279,044 was more than twice as great as that of the next state.

Investigation will show why Los Angeles has been the focal point of this Westward movement... why it is the capital of the West in population, in markets, and in industry. In choosing a new plant location, it is important to remember that even before the war the Los Angeles area had half of all the industrial establishments in California. There are sound economic reasons for this overwhelming preference. Let us tell you about them. Your inquiries are invited and will be treated in full confidence.

Los Angeles City-Owned

DEPARTMENT OF WATER AND POWER

207 South Broadway, Los Angeles 12, California

"Serving the water and power needs of 1,700,000 citizens"

Los Angeles OFFERS INDUSTRY:

1. Rich market, expanding with the Westward trend
2. West's largest population and largest supply of skilled labor
3. A home owning community where people prefer to live and work
4. Lowest general power rate of any major U. S. industrial center
5. Water supply ample for city of 7,750,000, at reasonable rates
6. Room for plant expansion and decentralization
7. Low construction costs; year 'round production schedules
8. Economic stability through diversified industry
9. Magnificent harbor; springboard to all the Pacific nations
10. Accessibility to the storehouse of raw materials in the West and the Far East

FOR BUSINESS EXECUTIVES...

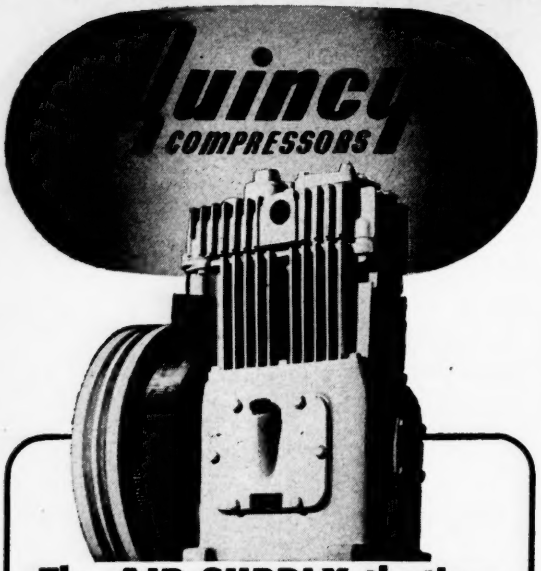
For reliable, complete information about this industrial metropolis, ask to have us reserve you a copy of "F.O.B. LOS ANGELES," a new brochure now in preparation. Just sign and attach to company letterhead.

NAME _____

TITLE _____

MR

Los Angeles 1st IN THE WEST 1st IN YOUR INDUSTRIAL FUTURE



The AIR SUPPLY that's--

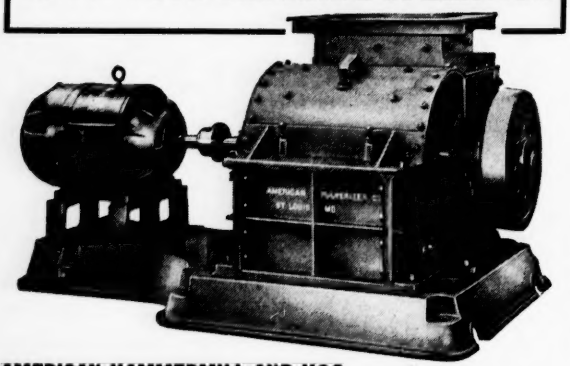
- ✔ HIGHLY EFFICIENT
- ✔ MORE COMPACT
- ✔ BETTER LOOKING
- ✔ PROVED DEPENDABLE

... for all compressed air requirements. Sizes 1 to 80 cu. ft. displacement, up to 500 lbs. pressure p.s.i.

QUINCY COMPRESSOR CO., QUINCY, ILLINOIS

Branch Offices: New York • Chicago • St. Louis • San Francisco

AMERICANS ARE CUSTOM-BUILT TO FIT YOUR CRUSHING OPERATION



AMERICAN HAMMERMILL AND HOG

American Crushers are not "all purpose" crushers. There's an American with the right reduction action and capacity to do your crushing job better.

American Shredder Ring types for coal and friable materials, metal turnings, etc. American Swing Hammer types for limestone, clays, cullet, wood refuse, fibrous materials, etc.

There are other types of Americans to crush many different materials.

Send for informational bulletin.

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1149 MACKLIND AVE.
ST. LOUIS 10, MO.

Anderson Tells Anderson

Holding out the county in which he was speaking as being representative of the entire South, Secretary of Agriculture Clinton P. Anderson, in an address at Anderson, S. C., predicted great changes for the South. In fact, he saw these as already taking shape. Among the highlights of the address were these:

"Honest appraisal of a situation is half the battle."

"Many adjustments must be made in the pattern of farming and non-agricultural employment must be found for people who now are or will be underemployed on too small, overcrowded farms. . . ."

"According to all signs the cotton South is on the threshold of an industrial-agricultural revolution that will shake its economy right down to the cotton roots. The world, the United States and the South are moving into a new age; in fact, we are already beyond its frontiers, brought there by scientific and economic discoveries. What were miracles a few years ago are now everyday operations. We are in an age of atomic power, round-the-world air transportation and greater mechanization of all lines of work. . . ."

"To live well and peacefully we must be increasingly productive, more efficient and must provide useful work for all. . . ."

"We are on the brink of great change and that change will touch the lives of all of us, particularly those who live in the South. . . ."

"King Cotton has been hard on the people and hard on the land. Your lands can grow grains and forage, fruits and vegetables but in the past these have been subordinated to cotton. If the South is to share fully in the benefits of the age we are entering King Cotton must be 'promoted' to a good useful servant . . . and as long as this crop stays in the exalted position as a dictator of an economy, instead of an obliging servant, there will be continual crises. . . ."

"In a world of jet airplanes, automatic assembly lines and robot bombs, the symbol of cotton farming still is the man and the mule, the field hand and the chopping hoe . . . Cotton, too, must be produced with machinery. . . ."

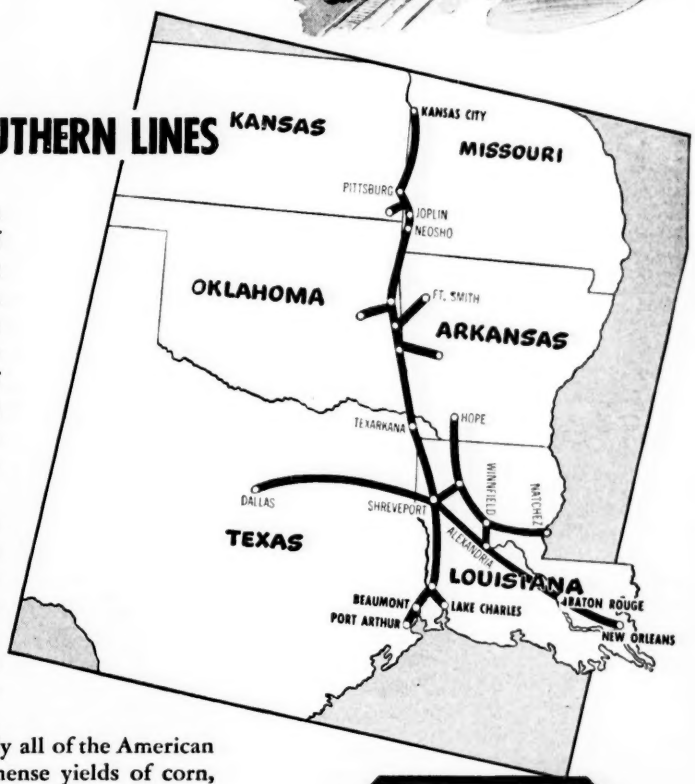
"Planning lays a foundation for the solution of the cotton problem in human as well as economic terms . . . Full industrial activity throughout the South will speed and ease the desirable farm and human adjustments that must be made to mold the pattern of the future. . . ."

"The remarkable thing about this great potential expansion in southern agriculture is that it won't have to 'steal' its markets from other areas. Diversified products will supply great wants that are not yet fully supplied. All in all we can look ahead and see a pattern for Southern agriculture brought by rapidly improving farm technology and full utilization of the South's magnificent industrial opportunities. . . ."

"For all who want to see them, the signs of the future are here."

Fertile Fields for Industrial Plants...

along KANSAS CITY SOUTHERN LINES



After Nature had stored her varied wealth beneath the earth in the six-state area of Kansas City Southern Lines, she might well have gone on to favor other regions. For—in addition to the oceans of oil, vast coal deposits, a seemingly endless flow of natural gas and a treasure trove of valuable minerals and metals—she blessed the land with great fertility, ample rainfall and a range of climate from temperate to semi-tropical.

Now, as industry reaches farther into the agricultural realm, it finds here not only wide opportunities in food processing, but an illimitable source of supply for that expanding science—chemurgy. For this region of extensive timberlands also produces a third of the nation's wheat... nearly half the cottonseed... more than half the beef cattle... virtually all of the American rice and sugar cane, together with immense yields of corn, sorghums, soy beans, potatoes, fruits, melons, grapes, berries, poultry and dairy products.

Moreover, this wealth of resources and choice of climate mean progressive people and expanding markets. They mean that in this rich, fast-growing corner of America—near five world ports on Kansas City Southern Lines alone—are fertile fields for industry!

YOUR INQUIRY STRICTLY CONFIDENTIAL

Address F. T. Ridley, Director of Development, Kansas City Southern Lines, Kansas City Southern Bldg., Kansas City 6, Mo., for Information and Cooperation.

KANSAS CITY SOUTHERN Lines

HOME for them!

and the HOME STRETCH for YOU!

You still have time! In December, your employees' allotments to the Victory Loan through your company's Payroll Savings Plan offer a final chance to help speed the proud homecoming of our fighting men—and do all in medical power for our hospitalized heroes!

Make December a plantwide TOP-THE-QUOTA drive! Now's the time to spotlight your Payroll Savings Plan—and "brief" your Bond-selling organization for fast, last minute action!

***Resolicit every employee to buy the* New F.D.R. Memorial $200 Bond**

The new Franklin Delano Roosevelt $200 Bond—better than actual cash because it earns interest—is a strong building stone toward the secure future of every employee-purchaser!

From now 'til the New Year—with plant rallies, interdepartmental contests and resolicitation—keep Payroll Savings Plan Bond-buying at a new Victory Loan high! Buying a Victory Bond is the best way of saying "Welcome Home" to our returning veterans! Also an active aid in assuring prosperity to your nation, your employees—and your own industry!

VICTORY LOAN

The Treasury Department acknowledges with appreciation the publication of this message by

MANUFACTURERS RECORD

★ *This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and War Advertising Council* ★

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AIR FILTERS

...the first complete line of electronic air filters ...offered for commercial and industrial use. The ...company also offers the services of an experienced ...engineering staff thoroughly qualified in the solu... ...of difficult dust problems. Its business is funda... ...mentally dust engineering, and in addition to the ...practical knowledge accumulated through years of ...research and experimentation, it offers the practical ...experience gained from the solution of thousands ...of complex dust problems.

...heating engineers and consultants whose re... ...sponsibilities involve the elimination of atmospheric ...dirt rely upon AAF products as the most modern ...in their line. Since air filters are an integral part of ...air-conditioning system, a vast field of opera... ...tion lies ahead. Already a long and impressive ...list of users proves the pre-eminence of AAF ...equipment and engineering in this field.

...is the policy of ...Corporation to ...finance many Southern ...enterprises which ...capital funds.

SUITABLE

...poration

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MEMPHIS
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...Investment

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THE TRUE PICTURE OF A WAR PRODUCTION JOB

....and who got the income

January 1, 1942 — *July 1, 1945*

FOR 3½ years of war, Pullman-Standard's major customer was Uncle Sam. Everything we made had a distinct place in the war effort. The United States Government controlled the distribution and character of our output, just as it regulated our materials supply, wages and final prices.

You, as citizens and taxpayers, paid most of the bill. To *you*, therefore, we account for the job we have done . . .

The Bill Was $721,962,909.57

For all wartime operations, Pullman-Standard received a total of $721,962,909.57. This is after a reduction of $19,536,411.00 through renegotiation of prices and fees on our 1942 and 1943 Government business. It is still subject to renegotiation adjustment to cover 1944 and 1945.

For This Money, We Delivered:

3,823 M-3 and M-4 Combat Tanks.

10,826 Wing and Tail Assemblies for C-47 and C-54 Airplanes.

20,020 Howitzer and Gun Carriages and Artillery Vehicles in sizes from 3" to 8". (We produced over ¼ of the nation's output of 105 m/m Howitzer Carriages.)

6,116,966 Shell Forgings, 105 m/m to 8".

5,132,521 Shells, machined, sizes 105 m/m to 6".

44 Landing Ships, Medium.

34 Patrol Craft Escort Ships. (Pullman-Standard served as "Lead Yard" in the development of PCE's of the new and larger type and also for all-steel mine sweepers built by other shipyards.)

1,210 Troop Sleepers and Hospital Cars.

17,922 81 m/m Mortars—Supplying a major part of the Army requirements for this weapon.

26,620 Railroad Freight Cars for Army and Navy, most of them crated and boxed for shipment overseas.

All of the above orders required thousands of spare parts, boxed and crated for shipment for use in foreign operations.

33,581 Freight Cars delivered to railroads for urgent wartime traffic.

817 Trolley Coaches, Street Cars and Railroad Passenger Cars.

What Did Pullman-Standard Do With This $721,962,909.57?

You, who are "shareholders" in the Government, received back directly $51,141,362.41 in the form of taxes (exclusive of Social Security).

You, the communities in which are located the Pullman-Standard plants and the hundreds of plants which fabricated for Pullman-Standard under subcontracts, were paid $381,326,804.38 for materials used—resulting in a substantial contribution to the payrolls and economic well-being of 278 towns and cities in 30 states.

These payments for taxes and materials account for $432,468,166.79—almost 60% of our total. *What happened to the balance?*

The great bulk of it—$226,956,148.86—went to our employes at the Plants (this was nearly 32% of our entire sales volume). *Direct* wages amounted to $212,530,101.02. In addition, the company spent $14,426,047.84 in employe benefits, such as Social Security, Group Insurance, Retirement Income Plans and Military Allowances. These *indirect* earnings averaged at least $861.00 per employe during this war period.

Pullman-Standard's average annual wage per employe for 1944 exceeded the national average wage for industrial manufacturers by $791.00, on a full-time equivalent employment basis.*

*Figures from U. S. Dept. of Commerce

We have accounted above for the disbursement of over 91% of all the money taken in by Pullman-Standard during the war period. *Where did the rest go?*

Most of the remainder was required for running expenses . . . fuel, power, maintenance and repairs, management and supervision, funds to replace the wear and tear of war service and for new buildings and equipment for more efficient production.

The Wages of Capital

It is not true, in the vast majority of cases, that war production has resulted in swollen profits. *Our net profits for the entire 3½-year period were just 2.34% of sales. These were the wages of capital.*

The money invested in our company has provided every Pullman-Standard worker with the tools and machines to do his job—an average investment of approximately $9,000.00 per employe. This capital came from the savings of thousands of individuals in every walk of life. It came from funds entrusted to insurance companies, school and hospital endowments, and trust funds of all kinds. This means that many other thousands of people who support these institutions receive benefits from our earnings through such dividends as the company is able to pay.

Dividends are the "wages" these investors receive for providing capital which makes private employment possible. The workers of Pullman-Standard have a vital stake in maintaining the financial soundness of the company and in preserving, by payment of a reasonable dividend, the confidence of those investors.

What Do All These Figures Mean to the Wage Earners of Pullman-Standard?

They mean that during the greatest volume years in company history, Pullman-Standard workers were paid to the limit of earning capacity, as determined by their desire to work extra hours. Cost of production was secondary to the demand for urgently needed war goods. There was no shortage of jobs.

No such situation faces industry today. Orders from Uncle Sam, our big wartime customer, have stopped. Wages and volume of employment *now* depend upon competitive efforts . . . upon our ability to give better values and better products than those of our competition. These, in turn, depend largely upon the workers themselves.

If American labor is misled into demanding *more pay for less work*, it will kill the goose that lays the golden eggs of prosperity. There can be no income from which to raise wages without raising prices. Higher prices lead to restricted buying. Lack of orders cuts down production and causes payrolls to shrink. This dangerous cycle begins with inflation and ends in depression.

If American labor realizes that *idle plants have idle paymasters*, it will *help* to replace wartime production by hard-won peacetime business. If the American working man stops to think that there can be *no* wages without sales and that wartime take-home pay must be earned to be maintained, he will make it his first job to help his plant fight for business without the handicap of prices so high that they block sales.

World's largest builders of modern streamlined railroad cars

Pullman-Standard CAR MANUFACTURING COMPANY

© 1945, P. S. C. M. Co.

Offices in seven cities • Manufacturing plants in six cities • Sales Representative in SAN FRANCISCO, CALIF.

CHICAGO, ILL. BALTIMORE, MD. BIRMINGHAM, ALA. CLEVELAND, O. NEW YORK, N. Y. PITTSBURGH, PA. WASHINGTON, D. C. BESSEMER, ALA. BUTLER, PA. HAMMOND, IND. MICHIGAN CITY, IND. WORCESTER, MASS.

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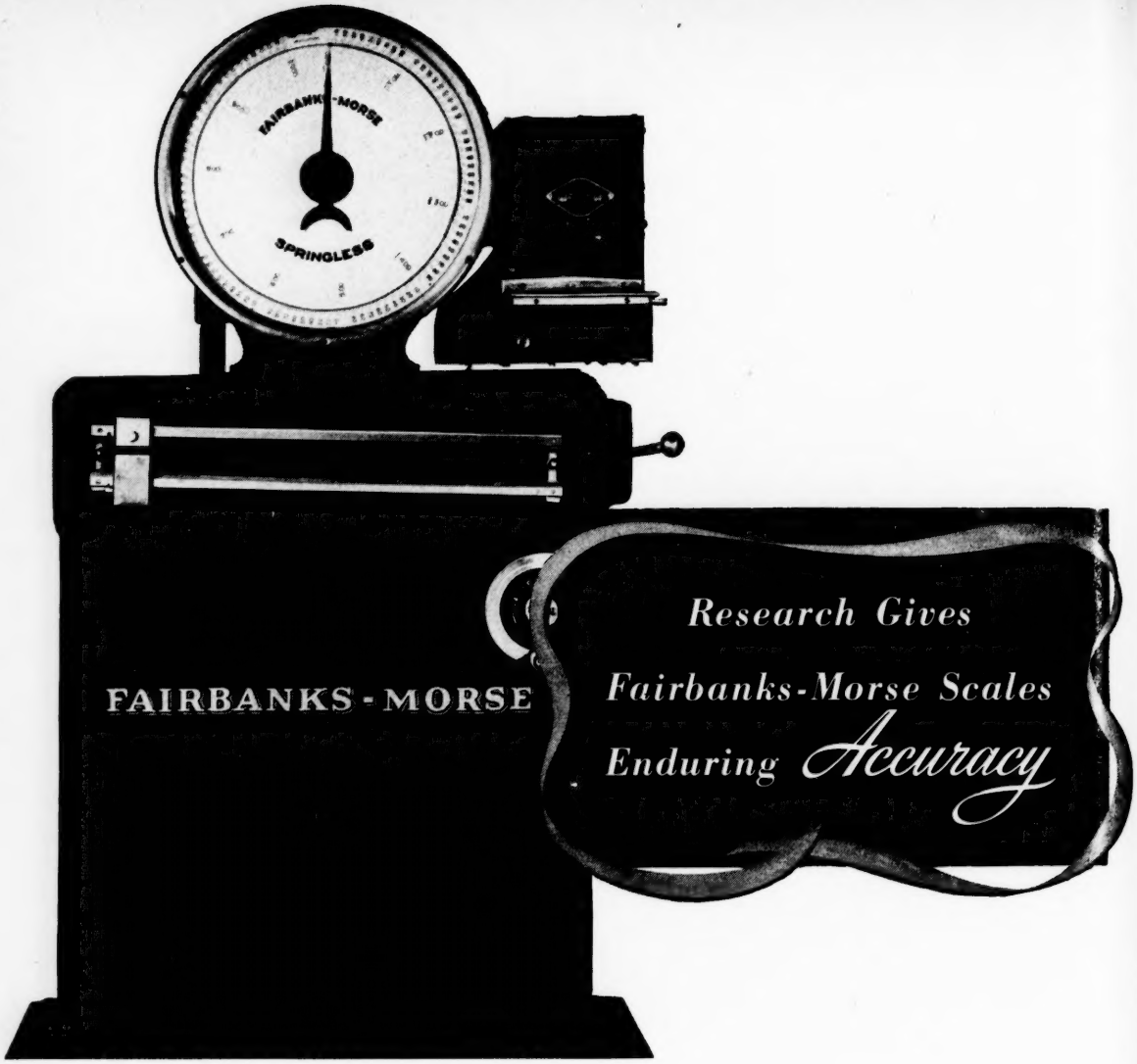


Fairbanks-Morse Scales have earned their world-wide reputation for enduring accuracy through constant research to improve even the most minute parts—through research in the selection of the most enduring materials—through research in design to perfect each part. This has been the Fairbanks-Morse policy for over a hundred years, and it continues to be the Fairbanks-Morse policy today.

Skilled craftsmen produce these parts with the aid of modern machines. Trained assemblers put them together. A weighing machine so constructed performs accurately day after day, year after year.

Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

Fairbanks-Morse

A name worth remembering

Diesel Locomotives • Diesel Engines
Scales • Motors • Pumps • Generators
Magnetos • Stokers • Railroad Motor Cars and Standpipes • Farm Equipment

"What Enriches the South Enriches the Nation"

THE CLOSED SHOP IS SLAVERY

By Thurman Sensing
Director of Research
Southern States Industrial Council

The people of the South are familiar with slavery. They suffered defeat in a war fought some 80 years ago over this question. That slavery was open and aboveboard. It was known for what it was—the ownership by purchase of members of a backward race brought from Africa. It was slavery that was doomed to eventual condemnation by all right-thinking persons and it was tragic that it had to be settled by force.

There are also other forms of slavery. Anything that denies a man his individual freedom, his right to act of his own free will and accord, his right to plan his own career and provide for the welfare, present and future, of himself and his family is a form of slavery. Such slavery is not so readily apparent as outright ownership, but it is nevertheless just as real and even more dangerous. Just such a form of insidious slavery has sprung up in this country—it is known as the closed shop.

When this nation was established some 150 years ago, it was recognized by its founders that every individual in it had certain inalienable rights. No condition was attached to these rights, for when conditions are attached to them, then they no longer exist. These rights are violated by the closed shop. When the individual is forced by labor bosses to pay union dues before he can secure a job with which to make a livelihood for himself and his family, then he no longer has the individual freedom guaranteed to him under the American Constitution. He is in effect paying taxes which he had no voice in levying—the very thing for which the Colonies fought for their independence from England when this nation was founded.

The closed shop is even more dangerous to the worker than to the employer. It is a form of slavery more insidious but just as real as outright slavery by ownership. If freedom in a democratic country means anything, it means that a man has the freedom to join a union if he so desires, but it also means that he cannot be forced to join a union before he can get a job and make a living for himself and his family.

Freedom of contract or freedom of action is a necessary part of the individual freedom upon which this government of ours is based. Ours is a government that belongs to the people and accordingly is supposed to be conducted in accordance with the wishes of the majority of the people. If the majority of the people, therefore, have a chance to voice their opinion and vote for such things as the closed shop rather than the open shop or centralized planning rather than local control or bureaucratic government by decree rather than legislative government by law, then that is the kind of government we would have.

Such things, however, are contrary to all principles of freedom for which man has striven throughout history and certainly they are repugnant to the American people as a whole. Even if the majority of the people voted in favor of these things, it should be remembered that we would then no longer be living under the Constitutional democracy which our forefathers founded for us. The founders of this government realized that man has some inalienable rights which even a majority vote should not take away from him. It is not to be believed that the majority of the American people would ever vote their approval of such practices. We may be sure the people of the South do not believe in them. Why, then, should small organized minority groups, taking advantage of particular situations, be allowed to force their will on the free individual citizen of America?

The slavery produced by the closed shop is a type to which no man who believes in free democratic government can submit. If the worker can have his rights taken away from him in this manner by labor bosses with the sanction of bureaucratic government, then he had just as well live under a dictatorship or a communistic form of government, neither of which does more than deny him the same rights.

The American people cannot submit to the closed shop and have their country remain America as they have known it.

A False Premise

The Washington conference between management and labor was doomed to failure before it started. It was doomed to failure because the ideas upon which it was based were predicated upon a false premise—that management and labor were economic enemies and that the best the conferees could do would be to agree on substituting for business some modern Marquis of Queensbury rules for the old London prize ring ones.

This false premise is based on the modern labor leaders' antiquated conception that labor itself is a commodity to be bargained for and eventually sold and bought in bulk at a price. It ignores all belief in human nature with its corollaries of individual freedom, inspiration and ambition.

Not only have we seen this erroneous idea of labor-management relations nullify any value to the public in the conference which it has so recently disemboweled but we can see it working inside of the entrails of labor organizations themselves. There it reveals itself as the "law of the pack" where the leader must lead the pack to ever better "kills" or be able to turn on the pack and dominate it, or failing in either of these, to have his own carcass devoured and his place taken by a new leader. This is not a pretty picture for any member of the pack to contemplate as an individual. It is also a disgusting sight for the public to have thrust before its eyes.

The idea that there is a natural antagonism between management and labor is an outgrowth of the "master and slave," "lord and serf" idea that historically we should have outgrown. It was revived during the past three score years by men who, for the most part, believed they could improve the economic condition of some of their fellows. In the past decade we have seen this idea perverted for the purpose of gaining money and power by a few demagogues who must foster it in order to preserve and accentuate their power—not only over management—but over all of us, their serfs included.

The public has displayed an intensity of interest in the current wave of industrial strife second only to that caused by the war. It has seen discharged World War II veterans re-enlisting in the armed forces rather than become identified with union oligarchy and forced to pay tribute for the right to work.

It was in the days just before the conference began that labor leaders took time out to hurl a blast at the Burton-Ball-Hatch bill, a measure designed to protect public welfare without favor for either management or labor. Said these self-appointed directors of American economy: "This (the bill) is the most bald-faced and arrogant attack against labor ever launched in the history of this country." Wild talk such as this is not unexpected from the lips of men coddled for years by governmental partiality and shielded by the one-sided Wagner Act. Abuse of privilege, it would seem, is about to bring its own retribution.

This situation exists in the America which has been known as the land of opportunity. It still should be so known. But it will not be if labor, by antagonism, encourages a class consciousness that dries up the springs which are the sources from which the streams of management personnel flow. For management is nothing more than the more successful workmen. How many railroad presidents who rose up through the ranks do you know? How many Henry Fords do you think the present unions are developing?

If the late defunct conference had accepted as a basis for its deliberations the true and fundamental thought that the interests of labor and management were identical and that they could be best served by serving the public it would have borne palatable fruit for the Nation as a whole, for the individual working man and for the manager in whose shoes he hopes some day to be. But let's not indulge in idle fancy. Could the Hillmans, the Murrays, the Lewises, the Greens with whom the conference was packed agree to relinquish their lucrative and powerful jobs just for the sake of the welfare of all of the country and the future of human relations?

Pine to Paper

In its very first issue—September 2, 1882—the MANUFACTURERS RECORD said, ". . . there is need for a paper which will adequately represent the manufacturing interests and keep them abreast of the rapid improvements in the material advance of the South." Through the years the MANUFACTURERS RECORD has faithfully tried to do that, and more too.

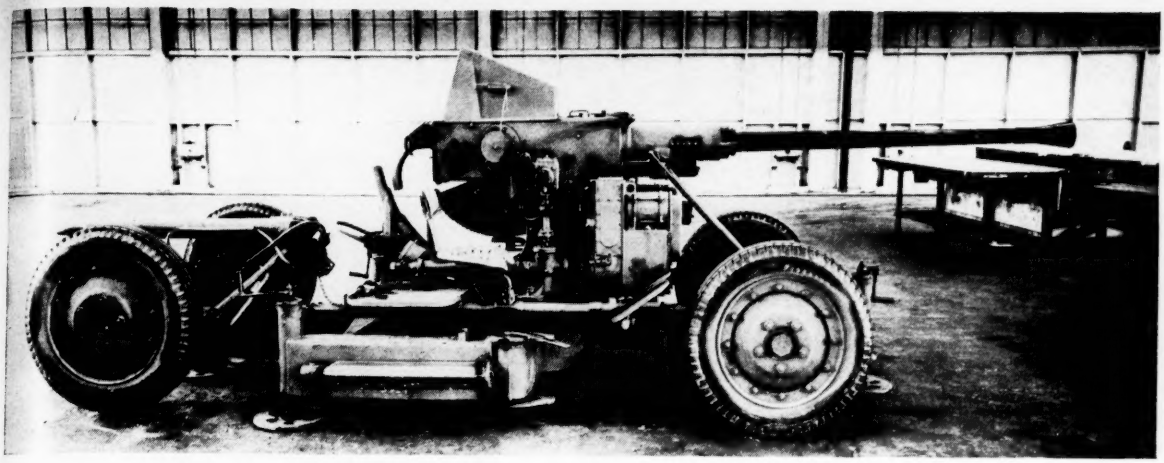
Continuously, we have tried to arouse the business men of the South to the resources "in their own back yard," pressing the theme that manufactures founded on native raw materials would produce a more abundant economy than one which merely exported those same materials for manufacture in other regions.

A recent analysis of imports of newsprint paper impels us to again remind the South of a neglected opportunity which, if seized, would greatly enrich the southern states and the nation.

During 1939 the United States imported 75 per cent of all its newsprint needs. Between 1938 and 1940 we produced an average of 950,000 tons a year, foreign lands supplying 2,630,000 tons annually. In the war years military demands for papers other than newsprint further cut our production. We relied mostly on Canada for our requirements. All of this has happened in a land that could supply the newsprint wants of the nation for generations to come.

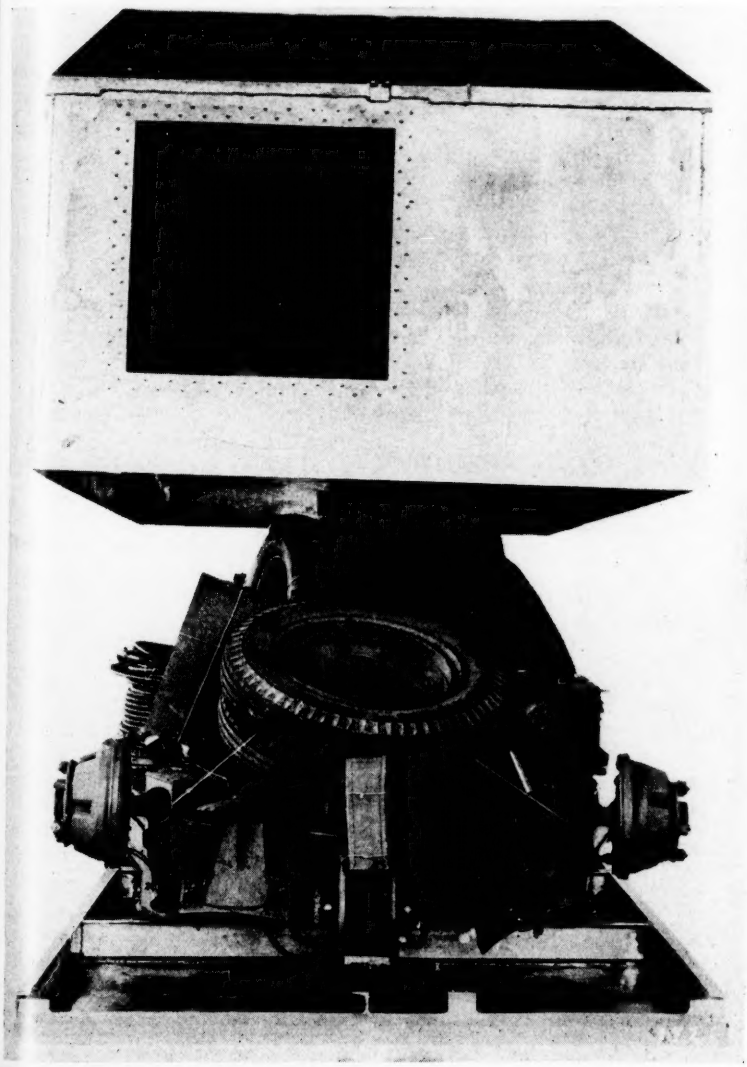
The pine forests of the South offer practically unlimited raw materials, and would even leave a surplus for export purposes. Most prolific of all trees, the southern pine matures to suitable pulp size in ten years—Canadian spruce takes 50 years. Thus we see nature supplying our yet-unbuilt paper mills with a perpetual flow of raw materials. Climatic conditions give the South more working days a year than any other pulp producing section of the world.

Back in 1937 Roger W. Babson, famed business expert, said: "Some day the manufacture of paper in the South will rival the production of cotton."



AMERICA'S WAR MACHINE "HIBERNATES"

The 40-mm. gun above is shown below dismantled and about to be packaged.



by

Jonas Robitscher

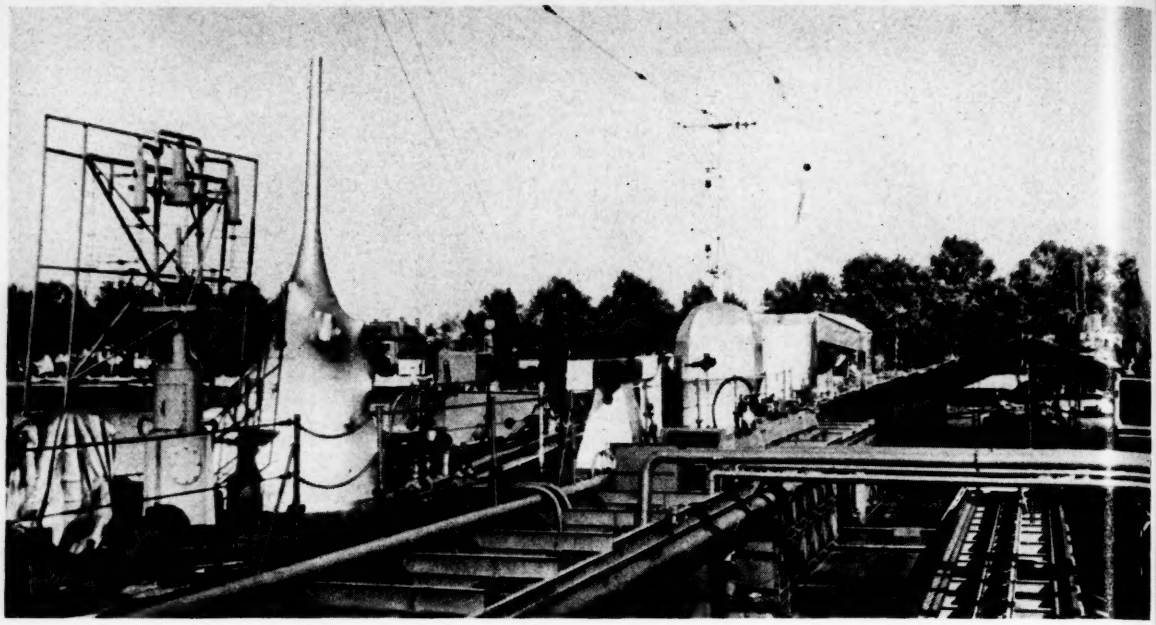
THERE will never be another Pearl Harbor—if there is a "next time," it will be New York, Detroit and Pittsburgh. We will be playing on our home grounds from the kick-off—and the ball will be an atomic bomb.

Faced by this fact, a group of army, navy, airforce, and government officials are charged with keeping America defensively on her toes. They are, of course, maintaining permanent peacetime forces. Moreover, they are seeing to it that a large part of the greatest war machine the world has ever seen will not go onto the scrap pile as was done after the previous "war to end wars." Instead, it will go into "hibernation," ready to be awakened and to strike at a moment's notice.

Millions of rifles, bazookas, flamethrowers, and machine guns, and billions of rounds of ammunition are being stored away in that great American invention, tin cans. Stacked in great piles at strategic points, this "canned armament" will be safe from deterioration for an indefinite period. Weapons and ammunition can be issued with no more retooling than the twist of a giant can-opener.

Bigger equipment like field guns

(*Continued on next page*)



Above—Sheathings, coatings and housings for ordnance and other equipment on the AVC-1 experimental preservation laboratory at the Philadelphia Navy Yard are part of the Navy's program to keep a reserve fleet of hundreds of ships ready for future emergency action.

are being incased in moisture-proof containers to keep them in good condition for immediate use.

These plans to meet the first shock of war, however, are only a small part of the general preparedness program, which in turn is only a part of the plan to make America, as Robert P. Patterson, Secretary of War, puts it, "a nation devoted to peace whose energies in an emergency can be co-ordinated and focussed to subdue any attack on the peace."

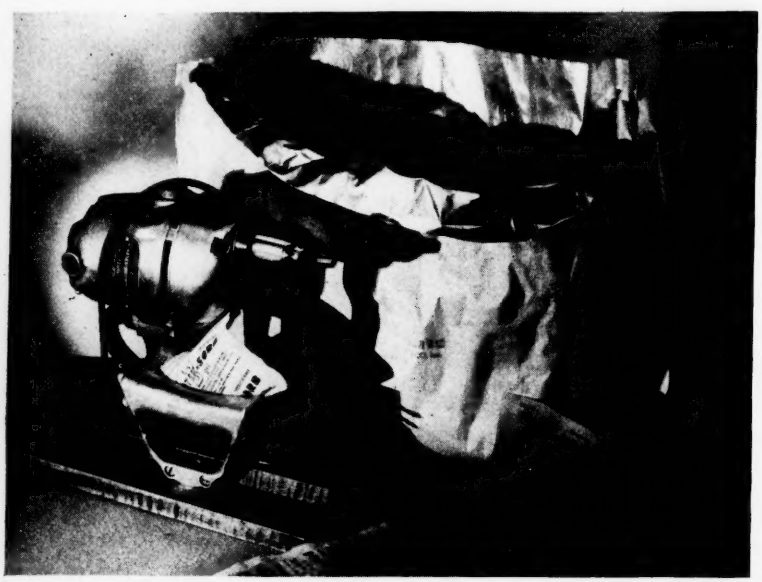
It is part of Article 3 of his "four planks for peace" which calls for "a plan for swift industrial mobilization that will permit complete and immediate conversion to a war footing when attack becomes imminent." Other planks are unification of the armed forces, peacetime military training, and encouragement of scientific research.

Quick rearmament, as has been stated, is only the beginning. America's top military men know, from the example of Germany and Japan, that no nation wins a war on the strength of the weapons with which she *enters* the conflict.

Continued production capacity is what counts—and to facilitate it, "ghost factories" will dot the American countryside; eerie, boarded-up buildings that show no sign of life to the outside world, beyond a few vigilant guards. In the glooomy interior, however, will be great looming giants—turret lathes, cranes, and machine tools coated with special preservatives, sleeping against the day when they may be called upon to spew out planes and tanks.

For the air forces alone, Congress has been asked to secure a minimum of 26 million square feet of factory space that has been used to build planes and engines, the equivalent of 12 of the largest and most modern war factories.

Every other department of ordnance from canteens to landing barges, from jeeps to high-explosive shells, would require proportionate



Left—A Baltimore-made electric drill ready to be enclosed in a moisture vapor barrier bag. The silica gel is made by Davison Chemical Corp.

reserve factories. Rubber, nylon, and other raw-material plants would be treated similarly.

Not all plants would be put into hibernation. Some would be rented to industry with the proviso that they could be reoccupied at a day's notice, and that the tenant make no alterations that would render the plant less useful for war production. In these reserve factories, 65,000 machine tools, which cost the government $300,000,000, would be kept in readiness.

Army and navy men want these "stand-by" factories to be dispersed throughout the country, to increase the number of targets enemy bombers would have to seek out. This tactic would offer some protection—some experts believe the only protection—against atomic bombing. Also, if a number of plants are located well inland, America's defenders would have time to intercept enemy aircraft or projectiles.

Thousands of ships, both fighting and cargo, are being kept in a state of "10-day" readiness as a reserve for the regular peacetime navy. Newest scientific methods are being called on to do the job.

"Previously the method of keeping reserve fleets ready for action was to have a full crew aboard, polishing brass, fighting rust, painting, maintaining engines and gear in top running order," said Captain H. Gordon Donald, demobilization officer in charge of the navy's bureau of ships. "The cost of maintaining today's huge reserve fleets this way would be prohibitive."

One solution is a substance the navy calls its "thin-film rust-preventive compound." Sprayed or brushed on a ship's equipment, it not only keeps rust at bay, but doesn't even have to be removed when a ship is put back into service.

New hot plastic paints protect the hulls of ships both active and "in storage." One application will preserve a ship for five years in salt water, and 15 years if it is berthed in fresh water.

But perhaps the most spectacular answer of the navy to the deterioration of unused ships is to air-condition their interiors. A dry ship remains free of corrosion, mildew, mold, and rot.

Machines which will keep moisture out of ships are being fitted to hundreds of navy vessels. When the humidity reaches a certain point, they automatically pump out the air, remove the moisture from it, and pump it back into the hold. When moisture content falls below the danger point, the machines shut themselves off. This way, all stores except food, ammunition, and fuel can be kept on board, thus enabling a ship to go into action with the least possible delay.

The navy plans to store more than 2,000 ships—one-fifth of its wartime strength. Berths are being prepared at Boston, New London, Philadelphia, Norfolk, Newport News, and in St. John's River, Fla. West Coast and Gulf berthing points include Bremerton, Tacoma, Mare Island, San Diego, and Orange, Tex.

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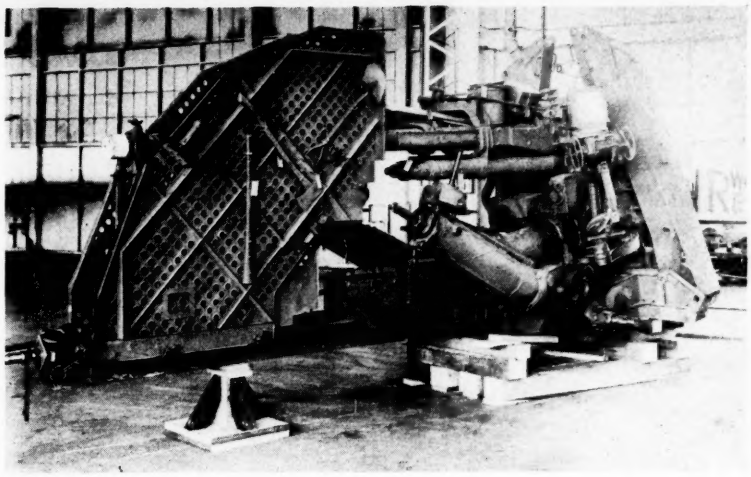
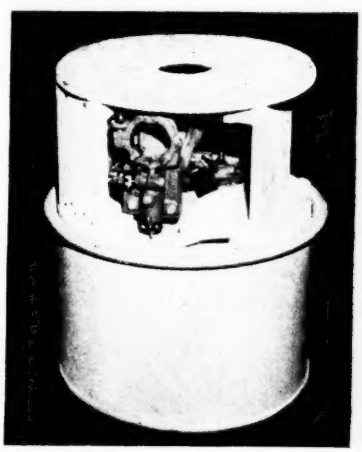
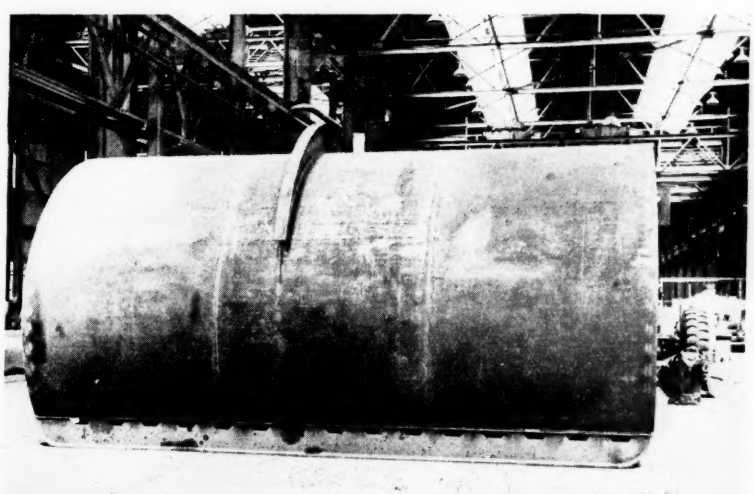


Above—This 90-mm. anti-aircraft gun is dismantled and ready for packaging in the big "can" shown in the illustration at the bottom of the page. American Bridge Co. makes the container.



Above—Fire control instruments blocked prior to sealing in standard metal drums at an army arsenal. Among companies participating in the program are Continental Motors, Goodyear Aircraft, Warren City Manufacturing, General Dredge, American Steel Dredge and International Harvester.



Above—Instruments vacuum canned. The cut-a-way shows dehydrating, cushioning and sealing principle.

(*Continued from Preceding Page*)

Using latest methods of preservation, one man can do the work of 50 needed to keep a ship ready for active duty. A cruiser or five submarines can be kept in readiness with a total crew of four officers and 36 men.

The Maritime Commission will lay up another 2,000 cargo vessels and tankers, totaling 20 million tons of cargo-carrying capacity. They will be tied side by side in groups of 25 or 30 in protected harbors and estuaries. To keep each one ready for service, will cost $6,000 a year.

Officials are not forgetting the lesson of the scores of Hog Island freighters left to rust and rot after the last war. After Pearl Harbor even these old hulks had to be brought back into service—but almost every ship had to be practically rebuilt.

When war came to America, we had to scramble for strategic war materials such as rubber, quartz, manganese, nickel and chrome. If American scientists, working under heavy pressure, had not been able to produce synthetic rubber, the war might have been lost or greatly prolonged.

Today Congress has before it a secret report of the Army and Navy Munitions Board showing the quantities of 100 strategic raw materials which should be stock-piled to keep America safe.

If Congress agrees, precious hordes will be kept in bank vaults, underground storehouses, and warehouses. Quantities would range from less than 100 ounces of such rare metals as ruthenium and palladium to millions of tons of bauxite ore, from which aluminum is made.

Included in the list would be such war-essentials as diamonds, gold, silver, and zircons, arsenic and asbestos, bismuth and tungsten, talc and lead.

All these preparations based on traditional weapons of war might appear to be futile in the face of the atomic bomb. But military men already see the atom as just another weapon.

True, it is the most devastating that man has yet discovered. But they point out that rocket-firing fighter planes have not caused the bayonet to be discarded and self-propelled artillery has not eliminated the horse. Neither will the atomic bomb, in their estimation, render obsolete the guns and tanks and planes with which America and her allies won the greatest war in history.

America's First Liberty Ship is Rededicated to European Service

The S. S. Patrick Henry, America's first Liberty ship, early this month returned battered and rusty to Baltimore, the port where she was built, after 10 voyages during which she traveled 143,000 miles since her launching in September, 1941.

The homecoming was marked by a rededication ceremony, the feature of which was presentation of a scroll to Captain John Ward, the ship's master, by the sponsor, Mrs. Henry A. Wallace, wife of the present secretary of commerce and former vice president, followed by a luncheon.

Birthplace of the Patrick Henry was the Bethlehem-Fairfield Shipyard, Inc., Bethlehem Steel operated plant of the Maritime Commission, now being dismantled after one of the outstanding ship construction accomplishments of the war.

The Bethlehem-Fairfield record carried out under J. M. Willis, general manager of Bethlehem's shipbuilding division in the Baltimore area, embraced 384 Liberty ships, 30 vessels of the LST type and 94 Victory ships. The first to slide into the waters of the Patapsco River was the Patrick Henry; the last was the Atlantic City Victory.

Lykes Brothers, operators of the Patrick Henry since she was launched, announced that the vessel will be used for regular duty between American and European ports. Her maiden voyage was around the Cape of Good Hope to Egypt via the Suez Canal.

Later voyages saw her braving the Arctic to transport planes to the Russians. It was while plowing through icy waters on the way to Russian ports that ice corrugated her hull at the bow. Dressed up for the rededication, she was newly painted gray and was flying international code flags reading "We are ready for peace."

The Patrick Henry's eleventh and current voyage is again across the Atlantic. Her cargo is composed of relief supplies intended for distribution by United Nations' Relief and Rehabilitation Administration in Europe.

Below—Shot gun enclosed in Pliofilm moisture vapor barrier with Protek-Sorb silica gel as the dehydrating agent.

GRANITEVILLE COMPANY CELEBRATES ITS CENTENARY

ONE hundred years ago William Gregg was one of the first Southerners to perceive that the South was too exclusively devoted to plantation agriculture and too neglectful of mechanical arts and manufacturing industries to attain its greatest possibilities. He made his belief known in 1844 and 1845 in a series of essays entitled "Essays on Domestic Industry" and thereafter proceeded to demonstrate his convictions in a more practical way.

Soliciting the support of Charleston capital, he obtained a charter from the state of South Carolina for a textile factory and, in December 1845, Graniteville Company was organized. For the first eight years William Gregg worked as president without salary and in the depression of the 1850's he lent the company the remaining portion of his wealth over and above his investment to enable the mill to continue running.

Like contemporary companies, Graniteville had to face the vicissitudes of four wars from its birth to the present. During the Civil War, under Mr. Gregg's direction, reserves were built up of sterling exchange and cotton which would have been worth 100 per cent no matter how the war turned out. Despite the clamor of directors for dividends, he succeeded in accumulating sufficient reserves by the arrival of peace to refit the mill with new machinery after its ravaging wartime service. Untimely death in 1867 cut short the useful career of William Gregg but Graniteville remains as a monument to his foresight and wisdom.

Assets of the company between 1845 and 1945 increased from an initial $300,000 investment to $2,000,000 capital stock and surplus of $5,933,291. To the original plant at Graniteville have been added mills at Vaucluse in 1877, Hickman in 1901, Warren in 1919 and the Sibley and Enterprise plants in Augusta, Georgia in 1940. Gregg dyeing plant was built near the Graniteville mill in 1924. Together the seven mills on January 1, 1945 had 171,140 spindles and 4,023 looms, employed almost 5,000 operatives and recorded a production in 1944 of 99,965,000 yards of cloth and 86,182,271 yards dyed. In that year the company paid to the federal government in taxes over $10,000 daily. Its payroll ran almost twice that amount.

Along with his doctrine of conservative financial practice and practical business procedure, William Gregg's devotion to community progress has also continued to influence the policymakers of Graniteville Company. It has been said of William Gregg that he was from first to last a striking combination of the successful business man and the apostle of social betterment. As testimonial to the endurance of the spirit he ingrained in the policies of Graniteville Company, activities of the firm today include projects directed toward raising the cultural status and living conditions of those employed or associated with the company.

Outstanding among cultural projects is that of the organization devoted to William Gregg scholarships. The Gregg Foundation which administers the scholarships was established December 31, 1941, "for religious, charitable, scientific, literary and educational purposes." The forms of public service which the Foundation may offer are numerous, including both community and personal benefits. With the view of encouraging and helping deserving young people, the scholarship plan was devised, each scholarship award amounting to about $500 a year to enable young men or women to attend college or technical school.

William Gregg, the moving spirit in creation of Graniteville Company, South Carolina textile manufacturers who now operate seven large plants. The original mill is shown above.

Under the direction of the company's real estate Department, plans are constantly pushed to provide betterment of villages, houses and home life in general. Activities include home improvements, street and sidewalk paving and sewage and stormdrain installations. Recently a program of reforestation has been instituted on the company's land. Surveys have been made also of natural resources such as granite, sand and timber. Extensive plans

(*Continued on page* 90)

Left—The young lady is sitting on a fossil of pure bituminous coal—said to be 500,000,000 years old—and she is holding a piece of coal.

New Miracles from Coal

SHOES that will not show scuffing, woolen sweaters and socks that positively will not shrink? Cotton and rayon dresses that will come out of cold water clean and spotless—even if you spill ink on them? These and dozens of more new aids to modern living will soon be as commonplace in American households as that marvelous coal-made product—nylon. All this, thanks to the wonders that have been worked by chemists with common, ordinary, everyday bituminous coal.

"There is practically no phase of family life that has not been benefited by research in coal," a scientist in one of our great laboratories stated recently. "Everything from life-saving drugs to children's toys has already been derived from coal—a composite of the great tropical forests that covered our earth in the Carboniferous, or Coal Age, billions of years ago.

While one would hardly suspect, from looking at a lump of coal, that it can reproduce the odours of flowers, provide a good butter substitute and practically all the oils needed for heating and lubricating our machine-age civilization — these indicate only a few of the resources hidden in coal.

From melamine, one of the newest and the most sensational compounds of coal products, we are getting enamels that need only to be brushed with the hand to destroy all traces of a burning cigarette crushed against them. We will soon get paper bags in which you can carry home a couple of dozen oysters or some fresh fish without finding after a few blocks' walk that your parcel has become an untidy, leaky mess. Rayons and cottons through treatment with melamine resins can be made wrinkle-proof, crease, or pleat-proof. They can be made water-repellent and will stay that way despite repeated dry-cleaning laundering. Grand for the girls' sweaters, dresses, curtains, raincoats or sports dresses.

No longer must the wool socks you buy this fall become—after a few washings—just the right size for junior. Treated with melamine resins — by the manufacturer, of course, wool can *not* shrink!

And yet it's the same wool you always knew — just as warm and soft. Only the shrinking capacity of the wool has been eliminated.

We all know how easily a pair of white leather shoes, a handbag or suitcase can be spoiled by a hard scuff or tear that shows the leather under the white finish. This is now a thing of the past. A resin compound originating from coal has revolutionized the tanning industry. Not only are white leathers made pure white clear through but all leathers treated with this resin are heat and oxidation resistant.

The Germans, in the past war, proved that gasoline could be obtained from coal. The Nazi war machine, including the Luftwaffe, operated entirely on coal-processed fuels obtained by the hydrogenation of coal. Testifying before the Senate Oil Policy Committee, Dr. W. C. Schroeder, director of the Synthetic Fuels Division of the Bureau of Mines, declared that some of the experts who accompanied him on his tour of the Nazi war plants found the coal-processed fuels superior to our petroleum base fuels!

Today, in a move to prevent a liquid fuel shortage in America—threatened by our dwindling petroleum reserves—the U. S. Bureau of Mines is building pilot plants in the coal areas of the East and West to duplicate the German fuels. The $17,500,000 Missouri Ordnance Works will be converted for this purpose. An estimated three trillion barrels of gasoline can be obtained from our bituminous coal deposits, the world's largest, and enough to last us 3,000 years.

The first step in transformation

of coal into its numerous by-products begins in the coke ovens. Burned at a high temperature, the gases from bituminous coal are drawn off as ammonia, phenol, pyridine, naphthalene and coal tar. About 90 million tons—or one out of every six and one-half tons mined—were thus consumed in America in 1944. Every minute of the day and night three and one-half tons of bituminous coal are being dumped into by-product ovens in the United States.

Ammonia, converted in ammonium sulfate, is used largely as a fertilizer. Nearly two billion pounds were obtained from coal in 1944. Benzene and toluol, obtained from coal tar, until recently topped the war priority chemicals list. Vast quantities of benzene were needed for war plastics and high explosives. Vast quantities of benzene are also needed for high-test aviation fuel. Today, it is a strategic material in the manufacture of synthetic rubber, paints and enamel, medicines.

Naphthalene, familiar to everybody as moth flakes, is today more widely than ever being used for weather-resistant paints, insect repellents, dyestuffs and rubber chemicals. We produced 388 million pounds of naphthalene in 1944 as compared with 72 million pounds in 1940.

The best known coal-derived medicines are the sulfa drugs, or sulfaonamides. Sulfanilamide comes from benzene by way of aniline, acetanilide and other intermediates. Pyridine is a starting material for sulfapyridies. Aspirin, the sugar substitute, saccharin, and novocaine are derived from coal. So is the antiseptic hexylresorcinol; the germicide mercurochrome and the laxative phenolphthalin.

Coal tar, once considered useless, produces carbolic acid and other disinfectants. From coal smoke, sometimes a nuisance, has come the quinine substitute that played such an important part in the South Pacific War.

The B vitamin niacine, formerly called nicotinic acid, is also derived from coal.

In normal times, the perfume industry gathers its raw materials from the four corners of the earth—from rare flowers and plants. With the war, this supply ceased, and the industry was forced to turn to synthetic essences.

In coal, which is composed of flowers, plants and other vegetable matter millions of years old, U. S. scientists had found the needed essences.

During the war years, because of the heavy demand for coal "crudes," as they are called, benzene, toluene were available only in limited quantities as to the perfume industry. Today, there is hardly any limit to the supply.

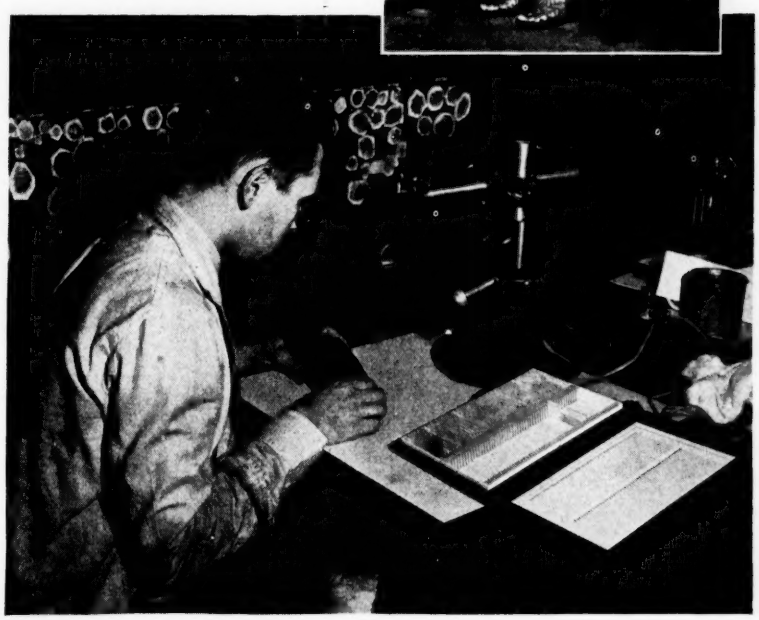
The cresols, coal derived, produce an artificial musk. Phenol produces synthetic wintergreen — and the well-known rose-scented phenylethyl alcohol.

Coal derived perfume materials are not, however, limited in their use to perfumes. Their industrial range includes their use in cosmetics, toilet goods, tobacco, foods, beverages—even in paints, textiles and stationery.

Nylon stockings from coal, air and water have captured the imagination. Nylon, in fact, is so much superior to silk in most physical properties, that it will probably permanently replace silk in America. It completely replaced silk during the war for military purposes.

In the plastics field, false teeth, artificial eyes owe their origins to coal—and the synthetic resins from which they are made have gone into the manufacture of everything from machine gears to life rafts.

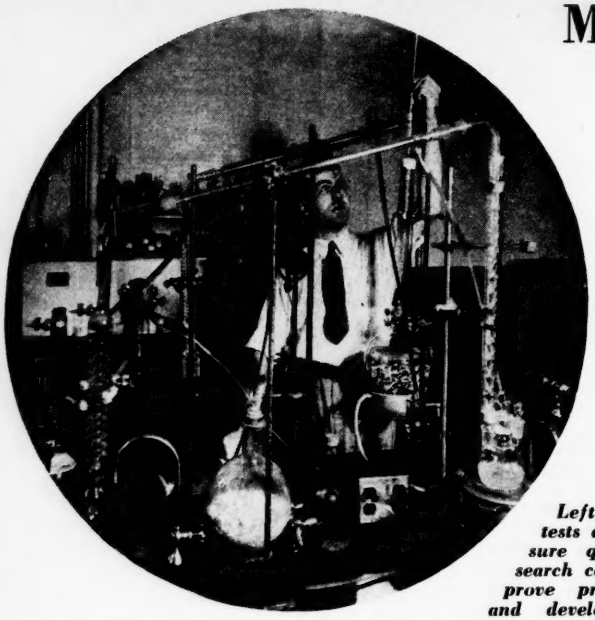
Right—Nylon, from which the black negligee is made, is a product of bituminous coal, lime and air.



Below—Scientist engaged in microscopic studies of bituminous coal. Thousands of photomicrographic photographs are made of varied samples of coal. This is a basic step in production of bituminous coal's 200,000 by-products.

Masonite Demand Heavy, Company Expands at $1,000,000 Cost---

Mississippi Site of Extended Facilities



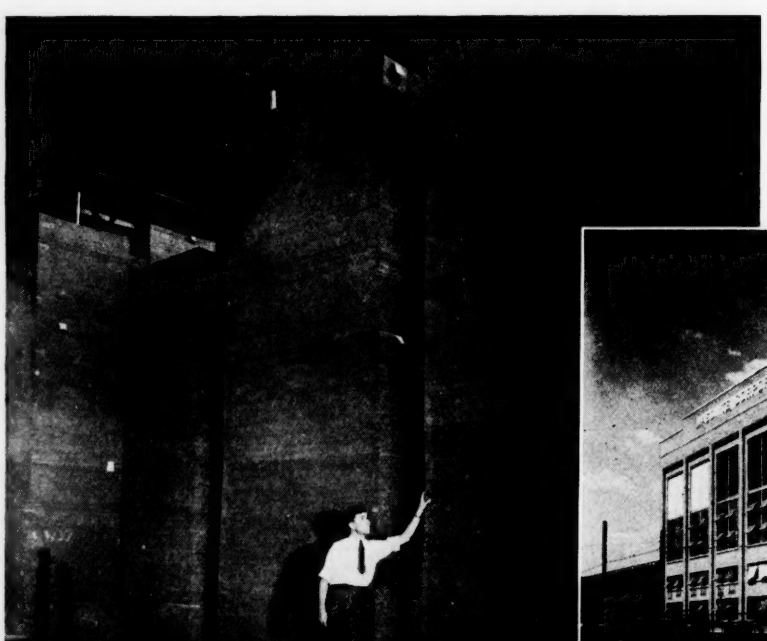
Left — Laboratory tests are made to insure quality and research continued to improve present products and develop new ones.

WHEN the board of directors of the Masonite Corporation authorized expenditure of over a million dollars for expanding the Laurel, Miss., plant by more than 30 per cent, the action focused attention on a southern industry that has grown from an idea to a great manufacturing operation within the short span of 21 years.

The story of the Masonite Corporation began at Laurel, Miss., in 1924. It was then that the late William H. Mason, after whom the company is named, developed the basic process by which pressed wood products are made.

From the humble beginning of a handful of men with a new idea, the company has grown to be one of the largest industries in Mississippi, employing an average of 2,000 men and women in the state and producing 90 per cent of all pressed wood hardboards manufactured in America.

Beginning with the small shack at the edge of Laurel where Mr. Mason developed the process for producing pressed wood, the plant has grown to occupy approximately 40 acres of an owned tract of 350 acres. Wages and salaries paid by the company in Mississippi during the fiscal year ending August 31, 1945, amounted to $4,173,000, and taxes



Left—Presdwood hardboards stacked and awaiting packing and shipping at the Masonite plant, Laurel, Miss.

Below—The Masonite power plant, where 87 million kilowatt-hours of electric energy was generated last year.

paid into the State Treasury amounted to approximately $200,000,

The proposed extension is evidence of the company's faith in the future of its operations in Mississippi. This appropriation, Masonite management has pointed out, is in line with the company's policy of anticipating expansion and development. A three-year program of expansion completed in 1941 enabled Masonite to meet the greatly increased demands for wartime use of its production in the manufacture of Quonset and Pacific huts for housing workers and service personnel, airplanes, tanks, radar equipment, parachute flares, land mines and ships as well as in the preparation of the atomic bomb.

Mr. Mason, for 17 years an associate of the late Thomas A. Edison, first went to Laurel in 1920 to develop a process for extracting naval stores from southern pine lumber during curing. While engaged in this work he conceived the idea of turning to good use the thousands of tons of wood chips and lumber ends then considered waste and consigned to the huge trash furnace of a nearby lumber mill.

When, in 1924, Mr. Mason had developed the process for exploding wood chips under high steam pressure and then by means of heat and pressure converting reassembled fiber into the pressed wood hardboards, practical uses for the new product were soon found. In the formation of the company in 1925, to manufacture the new products, it was decided to locate the manufacturing operation in Mississippi because of the plentiful supply of raw materials, power, water, labor and good transportation facilities.

In time, the waste from the lumber mill ceased to be a sufficient raw material supply. Today the Laurel plant uses approximately 800 cords of wood a day, bought through contractors from Mississippi farmers and other owners of woodlots and

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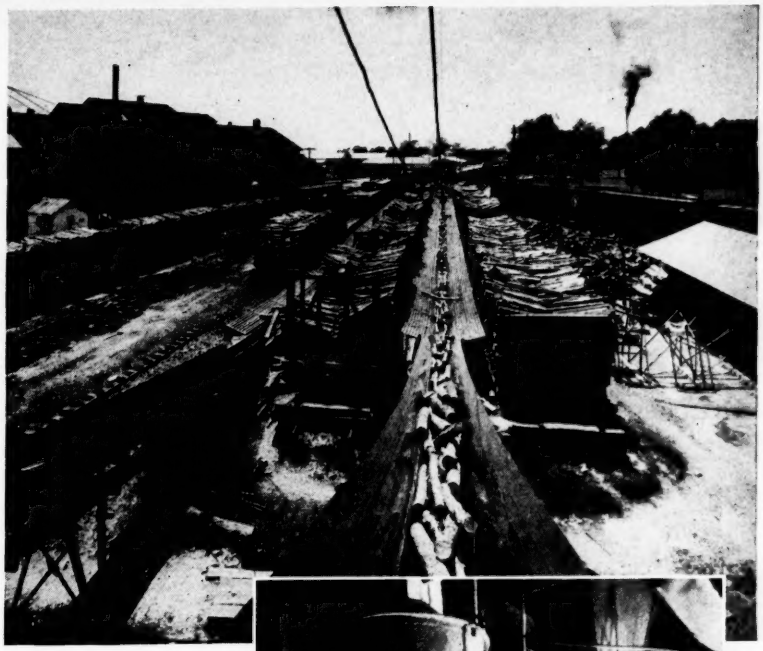
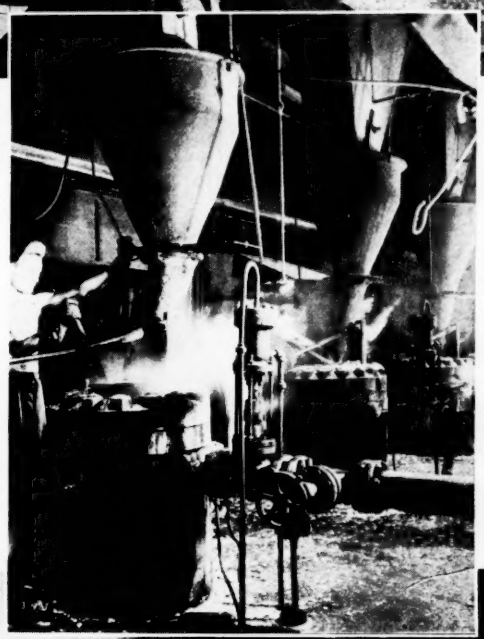
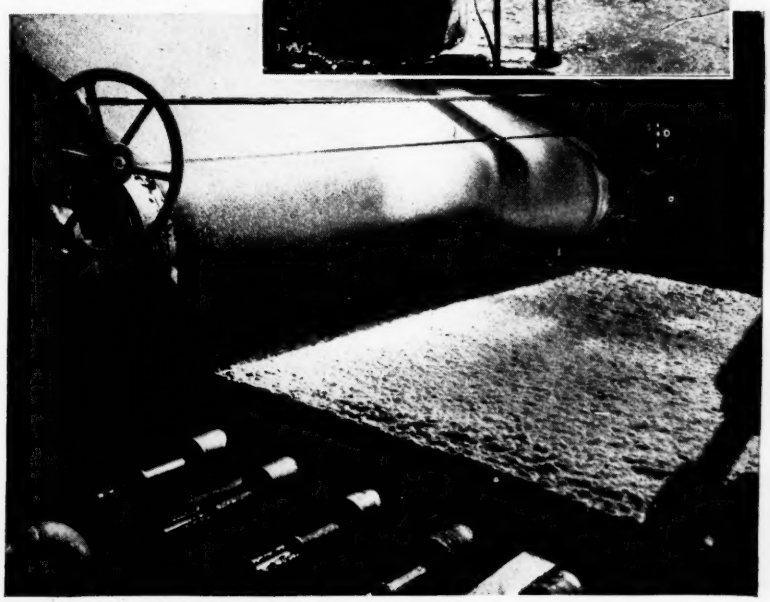


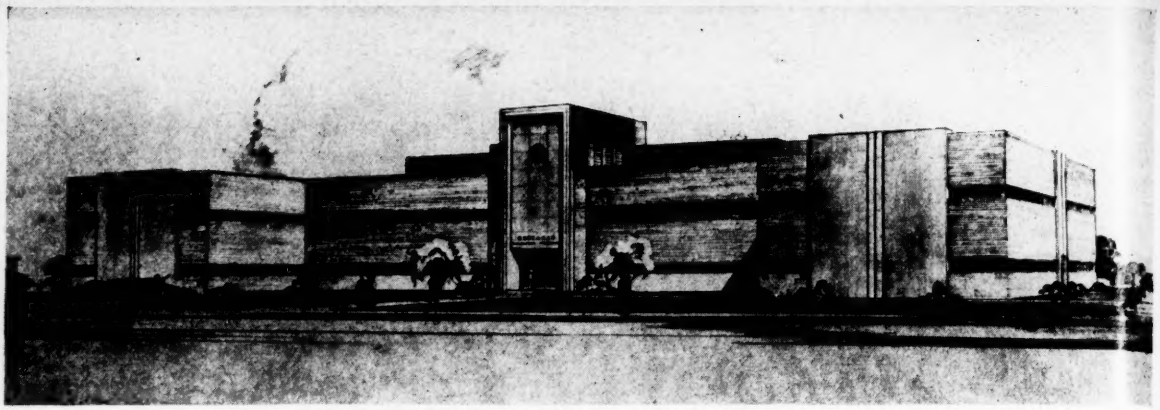
Above—Carloads of 5-foot logs from Mississippi timberlands arrive at Laurel to be conveyed to the chippers.



Right — "Guns" explode the chips into fluffy fiber under steam pressure above 1,000 pounds per square inch. These operate on the same principle as the first one used by William H. Mason in early experiments.



Right—The mixture of fibers shown here is known as wet lap and is being formed into boards. Coarse fibers have been removed and the wet lap will run over machines that gradually withdraw much of the water by suction or pressure before being cut into 12-foot lengths and trimmed to four-foot width.



SHELL TO FOCUS PETROLEUM RESEARCH AT $1,000,000 HOUSTON LABORATORY

A MAJOR step toward reorganizing and expanding exploration and production research of Shell Oil Co. will soon be taken when ground is broken at Houston, Texas, for a laboratory to involve the expenditure of almost a million dollars.

The new laboratory's research program, company officials said, will principally concern itself with augmenting America's petroleum resources by developing new and more efficient methods for discovering oil and for recovering it in maximum quantities from the underground reservoirs in which it is found.

Wartime experience has emphasized the drain on the country's petroleum reserves, say Shell officials, and the new laboratory will concentrate on two important factors of the oil situation. One is the increasing difficulty in finding new petroleum reservoirs. The other is recovery of large quantities of oil not brought to the surface from existing reservoirs by present conventional methods. Solving these two problems led Shell Oil Co. to reorganization and expansion of its research in exploration and production.

The new center will consolidate under one roof research in physics, chemistry and geology as they are related to petroleum exploration and production. It will also serve as an instruction center for training exploration and production field men in the new techniques and methods developed at the laboratory.

Architect's plans call for a two-story, air-conditioned building covering 40,000 square feet. Interior dividing walls will be made of glazed hollow tile, adapted to easy installation and removal, so that the size of various laboratory rooms can be changed at will. Provisions have been made for a first-aid room, locker and shower rooms, a library, two conference rooms, an outdoor dining terrace, and a cafeteria for 75 persons.

Contract for the building construction has been let to the Austin Co., Houston. The building is designed to accommodate a working staff of 130 persons, which eventually will be expanded to 155. In an existing air-conditioned building adjacent to the laboratory, an additional seventy-five persons will work on the design and manufacture of special exploration and production instruments.

Director of the new division of exploration and production research is Dr. Harold Gershinowitz, who since 1942 has been research director of the company's manufacturing department in New York. Assisting him as associate director will be Dr. M. King Hubbert, who, before joining Shell in 1943, had been a lecturer in geology and geophysics at Columbia University, and a consultant to the Office of Economic Warfare.

Dr. Gershinowitz joined the Shell Oil Co. in 1938 as research technol-

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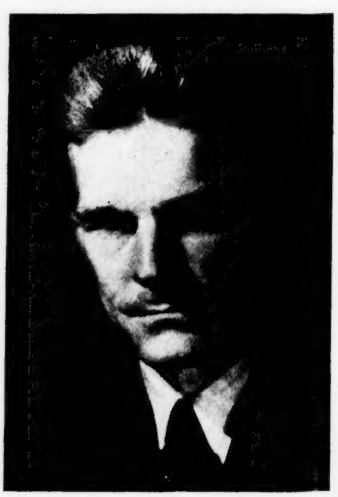
Dr. Harold Gershinowitz

Dr. M. King Hubbert



LABOR UNIONS --- THEN AND NOW

by
George H. Fisher

(Chairman, Labor Committee, American Society of Industrial Engineers)

MY father was a labor leader of the old school. He and his cohorts built up their union with blood, sweat and tears, for in 1897 there was no Wagner Act and Chicago was a tough town to organize —especially for boiler-room firemen who were scattered all over town and not concentrated in bunches in a few plants. Hence it was with much pomp and circumstance that Local No. 7 of the International Brotherhood of Stationary Firemen was admitted into the Chicago Federation of Labor, with a membership of 749.

On a hot Sunday afternoon, at the Federation's regular meeting at Hodcarriers' Hall over on South Halsted Street, the Federation's chairman ("fighting" Johnny Fitzpatrick, of the Horse-shoers' union) made a speech of welcome. He paid glowing tribute to the patient organizational efforts which had succeeded in bringing together under one banner the grimy boiler-room employees from the widely-scattered fire holes and ash pits of the Chicago area.

Three determined boiler firemen had done the organizing and their carefully-planned teamwork had insured the success of the local from the start. Mike Friel, who had a wide acquaintance and the ability to make friends on sight, had rounded up the prospects and herded them into mass-meetings. Blustery, oratorical Joe Morton had spellbound them by dramatizing their lousy working conditions, and the unemotional, businesslike Bill Fisher had signed them up and collected the five-dollar initiation fee and the first month's dues of one dollar per head.

When the first election was held it seemed quite natural to choose the amiable Friel as business agent, the well-poised Morton as chairman, and my soft-spoken parent as secretary-treasurer. For more than a generation this trio administered the affairs of the local and had the satisfaction of seeing it grow to a dominant place in Chicago's organized labor circles.

To imply that these three labor leaders, any more than any other human beings, were always beyond temptation or suspicion would of course be absurd. But all of them had pioneered in the building of the union because they believed in its cause. They had set out to correct what they knew to be a bad set of working conditions and they took pride in fighting tooth and nail to force an improvement. If, throughout this period they remained honest it was not because they were made of better stuff than some of their fellows but simply because they were preoccupied with making the local a legitimate success. They felt a proud, personal responsibility to each other and to every member. There was a real kinship between them and their following because they themselves were genuinely an integral part of the mass. They got a bigger kick out of shouldering their responsibility in an honorable fashion than they could possibly have received from any dishonest dollars they might have garnered.

On the other hand, in those rough and ready days if a union official was caught dipping into his union's funds or found to be in collusion with an employer it usually went pretty hard for him. Workers who had to voluntarily risk their jobs to pioneer in the building of a labor union were not the kind who easily forgot the traitorous act of one of their number. Trial and punishment, in those days, were relentless and positive—and followed close at the heels of the crime.

Like any other organization, Local No. 7 of the Firemen's union had its petty jealousies and its "inside politics." It suffered its fair share of feuds and factionalism. But in this mauve era the term "labor racketeer" was yet unborn, and in general, harmony reigned during a decent portion of the time. Meetings were fairly well-attended by a vigilant percentage of the membership. On each New Year's Eve the members' families and friends would gather together in North Side Turner Hall, at Clark and Division Streets, for the annual vaudeville show and dance, and on the 4th of July all would repair, with bulging lunch-baskets, to the shadowy elms and waving grasses of Luna Park for a midsummer's picnic. Here the kids would run their three-legged races, the men would bowl and guzzle their union-made beer, and the women would sit in the shade and gas leisurely over their pot-boiled coffee.

The union leadership maintained a close emotional and intuitive contact with the rank and file and this served to tide them all over many a rough spot. A grievance between a worker and his boss gained the immediate and effective attention of the business agent because the latter felt a definite personal interest in the matter as soon as he was made aware that the grievance existed. A brief, open-minded discussion of the matter between business agent and employer usually cleared the air in quick fashion, with little if any work stoppage.

The coming of the Wagner Act in 1935 was, of course, a big break for organized labor, and yet it hasn't been all beer and skittles either. It has dragged labor endlessly into the courts to listen to legal interpretations—a spot which labor has traditionally avoided for fear of being forced to the defensive by corporation-biased judges. The act has also popularized the most vicious type of synthetic company union—with its artificial leadership. Such unions flourish not because working conditions are bad but rather because the Wagner Act tends to create industrial situations which prove to be "a natural" for the formation of inside "stooge unions." It can be taken as axiomatic that where there is no spontaneous rank-and-file demand for unionization neither can there be true leadership of a sort that develops out of widespread resentment against evil conditions.

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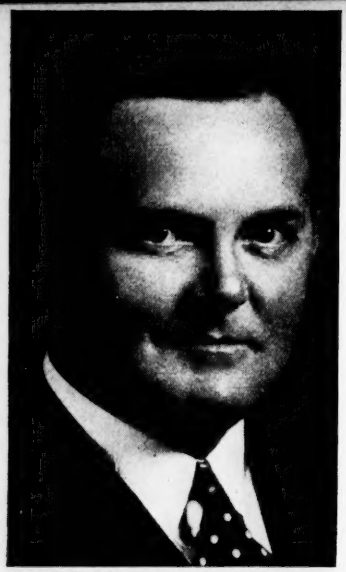
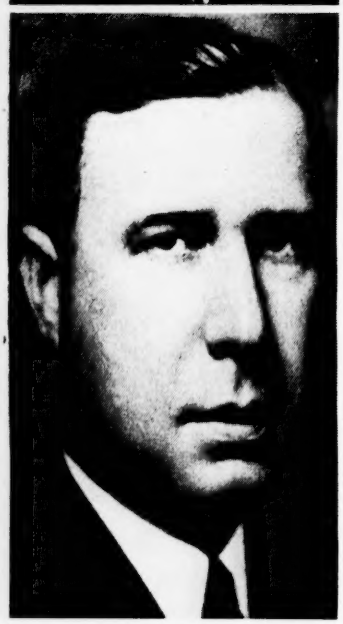




Southern Business Leaders See Gainful Swing Upward

by

John Mebane

A SHARP upward curve in the nation's economic pattern from here on out will swing increasing advantages to the South, in the opinion of an important group of those "men who should know."

The conclusion follows a series of discussions with some of the South's outstanding economists and financiers who are confident that the South's increasing industrialization not only will adhere to its prewar blueprint but will accelerate to a speed many thought impossible a half-decade ago.

It is the expressed opinion of Dr. Malcolm Bryan, first vice president of the Federal Reserve Bank of Atlanta and one of the South's most distinguished economists, that, in the long run, the Southeast probably will emerge from the war with an economic gain more favorable than that for the rest of the nation.

The Southeast, Dr. Bryan says, emerged from the war with higher gain than the remainder of the country. This was true for more than one reason. First, the Southeast has been chiefly a producer of raw materials—and prices for raw materials were favorable. The region profited also from expenditure of funds for war activities in which profits were rather long. Atop that, the short supply of goods meant that the Southeast was unable, to any appreciable extent, to spend its money outside the region itself.

Here, Dr. Bryan says, is how that added up:

In 1939, deposits in banks in the Sixth Federal Reserve District amounted to a little more than $1,500,000,000; today they are, roughly, $5,500,000,000.

Dr. Bryan believes this region will continue for a while to record economic gains against the rest of the country. Later, he anticipates a period of reaction, but he believes the region still will be relatively better off than it was before the war as compared with the nation as a whole.

The South today is emerging from its greatest handicap of the past—a demagogic political leadership that had retarded industrial and business development and had depressed the region's income. That is the opinion of Hal S. Dumas, president of the Southern Bell Telephone and Telegraph Co.

Mr. Dumas declares that in past decades the South, to an alarming extent, had been dominated by politicians who forced business and industry to labor in an "undemocratic atmosphere"—a contrast to the present day when persevering political leaders realize that business in the South needs encouragement in a positive direction.

"The South's greatest asset," Mr. Dumas asserted, "is that it is not confronted with a great conglomeration of interests—and it is just that conglomeration which has made living unpleasant and depressed in some other regions of the nation. People aren't satisfied to live in a filing cabinet. There is an increasing leisure for working people, and there is an important need of providing something to do with that leisure.

Left—Top—Robert Strickland; Middle—R. Clyde Williams; Lower—Wiley L. Moore.

Below—Gov. Ellis Arnall

"That is one reason," he added, "for the trend today to the development of the smaller communities."

No one locality, no one state in the South can progress a great deal independently of the progress of the South as a whole, he asserted.

"The only way to be prosperous in the South is to be prosperous together. There is a need for an exchange of progressive ideas among southern states, for the boosting of this region as a whole. I would like to see established some method of providing this — a Southern Chamber of Commerce, as it were."

The South, he continued, is "faced with the opportunity of building the finest and most fertile civilization in which man has ever lived—a civilization in which all men can possess a sense of personal dignity."

Mr. Dumas declared that "Once the South's money was 'foreign' money. The South itself was poverty-stricken. Other regions were encouraging business while we were beating it over the head.

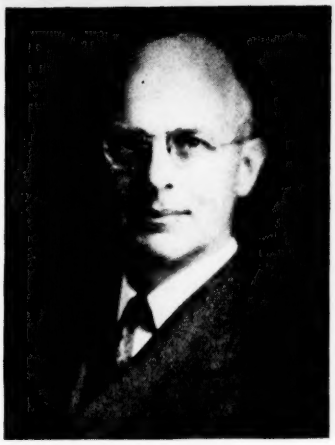
"Up to now," he added, "we have been too prone to sit and complain, and we've used our complaints as alibis for not doing jobs that should have been done. There is a need to shed complacency and do the job that needs doing. And one of the most important of these is to produce, utilizing our own resources, the goods the South needs and in sufficient quantities to supply the demands of our people.

"The South has just reached the point where it has enough income to be a good customer. We need to make the people conscious that they should 'buy southern.' "

R. Clyde Williams, president of the First National Bank of Atlanta, declares that the South currently "finds itself in possession of the essential ingredients required for an economic advance of tremendous proportions," but he believes that it still has a real job of "salesmanship" to do if the South's advance is to be as rapid as it should.

"We must sell ourselves on our resources and our potentialities so that we may develop and expand our local businesses," he said. "We must also sell others because we need outside industries which will come into the region and provide even greater employment and still more purchasing power.

"The South has been favored by providence in its natural resources, in its accessibility to materials it needs—but does not have within its borders—and in native labor adaptable to a variety of work. The events of the past five years have added enormously to our resources and to our abilities in matters of production and distribution."



Above—Hal S. Dumas

Right—Top—L. L. Gellerstedt; Middle —Erle Cooke; Lower—L. W. Robert

Mr. Williams pointed out that the large consumer markets and population centers are overnight from southern production and that there is a huge field of new markets in the Latin American countries to the South.

"There is plenty of money for all worthwhile undertakings in the region," he said. "The banking industry in the South today is strong enough and has resources sufficient to lend money on terms and conditions that are advantageous to the requirements of an expanding industrial economy."

The resources of southern banks have increased to such an extent that today they are adequate for financing southern industry of any size, declared L. L. Gellerstedt, executive vice president of the Citizens & Southern National Bank, Atlanta.

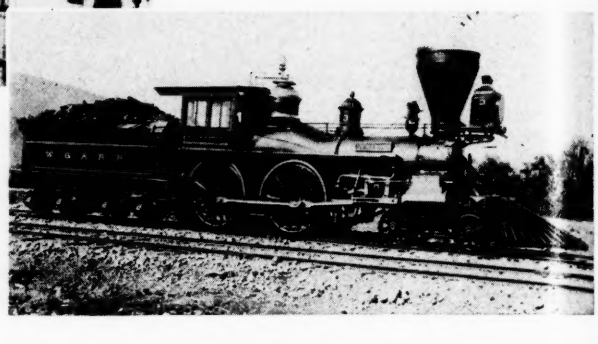
Mr. Gellerstedt declared that it no longer is necessary for southern industry to seek credit outside the South as was the case from the War Between the States until the late nineties.

"The banks of the South feel that they can make a definite contribution to the industrialization of this region," Mr. Gellerstedt said. "The

(*Continued on page* 84)

ONE HUNDRED YEARS OF RAILROADING

Left—Church Street depot, Nashville, after it was remodeled in 1896 to accommodate visitors to the Tennessee Centennial Exposition.



Right—The "General," famous locomotive of the War Between the States, now in the N. C. & St. L. depot at Chattanooga. Pursued by "leg" power and three locomotives of the period, the General was operated by a band of Union saboteurs bent on burning bridges between Big Sandy, now Kennesaw, Ga., and Chattanooga, Tenn. The attempt failed when the engine stopped at Ringgold, 68 miles from the starting point after a wild chase of about 8 hours and 15 minutes. The Western and Atlantic Railroad, scene of the episode, is now part of the N. C. & St. L. and its trains now cover the route.

OPERATING under a time-honored charter, the Nashville, Chattanooga and St. Louis Railroad celebrated its one hundredth birthday on December 11. Only two other railroads in the United States can point to a longer period of existence.

Chartered in 1845 as the Nashville and Chattanooga Railroad for the initial purpose of establishing a system of communication between Nashville and Chattanooga, the line not only paralleled those two cities in growth but played a vital part in the development of all parts of the South which it served. In doing this it survived four wars without ever being in receivership or bankruptcy. It has never been reorganized and has never defaulted on any of its financial obligations. In 1873 its name was changed through decree of the Chancery court at Nashville.

For its original financial structure, Nashville voted $500,000; the state of Tennessee voted $120,000. Charleston, S. C., contributed $500,000. The total was brought to $2,100,000 by a roundup of individual subscribers and the first stockholders meeting was held in 1848. There were 1,347 stockholders represented at the meeting.

Since those days the railroad has grown into a system comprised of five divisions with 1,071 miles of rail line. Division headquarters are at Atlanta, Chattanooga, Huntsville and Paducah. There are 704 miles of rail in Tennessee, 104 in Alabama, 123 in Georgia, and 60 in Kentucky. The system constitutes an important link from the West and Central West into the South, Southeast and Southwest. Many important industries and commercial activities operate in the areas served.

The N. C. & St. L. has experienced noteworthy expansion of business during its years of growth. Its original capitalization has grown manifold and now stands at $25,600,000. From the first dividend of $67,898 paid in December, 1856, cash dividends during the life of the road have amounted to $35,311,756, including that paid in December, 1944. Assets shown to have been $4,016,692 in 1854 had grown to $89,773,948 by December 1944 and operating revenues increased from $12,000,000 as of twenty-five years ago to over $42 million as of today. Operating revenues of 1944 registered a gain of $325,733 over those of 1943 despite increasing burdens of taxation.

Left—Dixie Flagler, Chicago to Miami streamliner, which operates over the Nashville, Chattanooga & St. Louis, The Dixie Line, between Nashville and Atlanta.

Above—Freight train ascending Cumberland Mountain, near Cowan, Tenn.

Important facility improvements are in progress and scheduled for early activity including a program for curve reduction. The curve reduction project is scheduled for completion within five years and when completed will bring the greater part of the road's curvature within a maximum of two degrees. Under the program, fast freight tonnage ratings of trains will be increased from 1,500 to 1,800 tons. The cost of the improvements which will also include grade reductions has been estimated at $2,600,000.

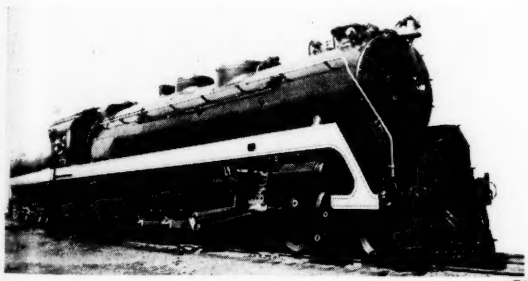
During 1944 an average of 222 trains were operated on the tracks of the system daily and of these 168 were N. C. & St. L. trains. More than a quarter million soldiers, sailors and marines were handled in that year, exclusive of furlough travel, and during the same period the road moved 2,490 special trains carrying armed personnel or war supplies. Employees of the company numbered 9,495 as of December 31, 1944 in comparison with 4,585 as of the same date in 1937. Since January, 1940, twenty large steam locomotives, sixteen Diesel switch engines and 1,275 freight cars have been purchased. Many new station facilities have been constructed or enlarged.

In a message issued by President Hall to former N. C. & St. L. men in the armed forces, he said: "Management of N. C. & St. L. has an abiding faith in the people of America and in the justness of their ability to recognize and foster private industry; in the eternal verity of the American way of life which has always recognized the policy of rewarding outstanding service. N. C. & St. L. management approaches the problems of tomorrow with the knowledge that it has lived up to its obligations during one hundred years and with confidence that it will continue to pioneer in transportation in the South."

Census of Manufacturing and Minerals Industries to be Made in 1946, First Since 1939

The United States Bureau of the Census, principal fact-finding agency of the federal government, will make the first comprehensive census since 1939 of the manufacturing and minerals industries, according to a recent announcement by J. C. Capt, Director.

Census of manufactures was inaugurated in 1810 and has been conducted biennially from 1919 to 1939, while the census of the minerals industries was initiated in 1840, the last one being made as of 1939. Both were suspended by executive order of the President that the Census Bureau might devote its energies to full cooperation in the war efforts of the various departments of government.



Above—The N. C. & St. L. has placed twenty modern 4-8-4 steam locomotives in service within the past three years. This is one of them.

Right—The present Union station at Nashville, as compared with the depot shown on opposite page.

OPPORTUNITIES FOR ENGINEERING RESEARCH — IN THE SOUTH —

ARTICLE II

Dr. E. N. Kemler

THE applications of engineering research to raw materials of the South offers endless possibilities. The South has not only been generously endowed by nature with raw materials but has also been given a climate adapted to the rapid replenishment of many of these raw materials as they are consumed. The possibilities in the raw materials field can be divided into the finding of new or improved usage for these raw materials and in the developing of devices and processes to reduce the cost of delivering such products to the ultimate consumer. The first field is usually studied by the chemist who tries to find new uses or improve present uses. The latter field offers a challenge to the engineer. Its possibilities include improvement in existing machinery, the development of new machinery for recovery of the product, improvement or devising new machinery for handling such products, and finally in devising new machinery to improve processing of the raw material.

Most raw materials are bulky and require much time, space and delay in their handling all along the line. The use of labor saving machinery in the handling of such products from the farm, mine or forest to finished product offers extensive possibilities for new devices. Improved machinery and facilities are needed by railroads, trucks and steamship lines as well as at the source of the raw material.

Some typical regional raw materials to which engineering research can be applied are cotton, nuts, foods, forage, wood, petroleum, ores and coal. Cotton to maintain its dominating position in the South must be made available to the consumer as a raw product at lower cost. If the price to the farmer is to be maintained at a fair level we must make it possible for him to produce more cheaply and also to reduce to a minimum the cost of handling and delivering it to the raw material consumer. This means better or more versatile farm machinery and gins, and improved handling facilities at the gins and by rail and water tranportation.

In the nut and vegetable oil field improved harvesting equipment, nut cracking and shelling machines, electronic sorting methods to reduce hand labor, and improved oil expelling machinery such as a continuous feed hydraulic device are needed.

War research has led to many developments in food preservation which will influence the preparation and handling of food products for market as well as in the home. The handling of citrus fruits by improved methods of canning, freezing, evaporation and concentration to improve product to consumer, reduce loss in handling and reduction in cost by reducing storage and handling charges are of current importance. General food preservation by freezing, drying, evaporation or concentration also have possibilities in reducing spoilage, storage and handling costs.

Food crops for farm animals also are susceptible to better handling. Improved drying and storage practices will result in better feeds as well as reduction of losses which result from field drying and improper storage. Improved machinery for handling these bulky crops and equipment which will reduce man hours of work in their harvesting and processing are needed.

The wood industry in general and the pulp wood industry in particular need more mobile, power driven harvesting equipment. Here again transportation and handling problems are important. There also are opportunities for developing new processes and products from present waste.

The petroleum industry represents one of the South's important raw material products. As oil producers turn to deeper formations for future reserves improved equipment and methods must be developed. Improved recovery methods to increase yields of existing fields and of new fields offer an important phase of research.

You are more familiar with the possibilities for engineering research in developing equipment and processes for the mining industry than I am. For completeness, however, I will review broadly a few of the major possibilities. These possibilities in the mining industry are similar to those in other regions. Abundance of iron and bauxite ores make the South a major mining area. Increased use of these ores can be brought about by improved classification methods. Research on methods of utilization and concentration of low grade ores is becoming increasingly important. Development of mining equipment particularly adapted to thin coal seams and for better equipment for processing the coal are of major importance in this industry. The future of coal as a household fuel will depend on the development of better home heating plants. Improved soft coal burning equipment is also needed for industrial uses.

by

E. N. Kemler

Head, Research Engineering Division

Southern Research Institute

The opportunities for engineering research in manufacturing industries are endless. We have only to look at such recent developments as the gas turbine, jet propulsion, atomic power, synthetic rubber, radar, synthetic textile fibers, plastics, and aviation to realize the effect of research and technology on our industrial development.

Engineering research could perhaps best help southern industries by assisting in the development of special equipment or in the improvement of existing equipment for processing raw materials of the South. To compete industrially with other regions requires that you have equipment and techniques which are better than your competitors, not just as good as theirs.

Today, with so many new war developments waiting to be adapted to peace time use the opportunity to get ahead of the field is greater than ever. The developments in instrumentation now make it easy to see, hear, feel and measure what is going on in a machine. A thousandth of a second or a thousandth of an inch can be spread out on a record as long as we wish. By applying these tools to the studying of many of our processes and machines we can determine how they can be improved or speeded up.

The electronic field probably offers the greatest potentialities for improvement in machinery. This field is so new and the developments so extensive that it is difficult to predict what electronic devices can do. They will certainly bring about many changes in controls and in automatic machinery.

As new developments are put into use it is necessary to review them to see how they can be adapted to existing equipment. Today the operator, engineer and researcher must investigate such new developments as electronic controls, hydraulic controls and electrical accessories to mention only a few to see how they can be adapted to improvement of machine operation. New materials which are available make possible new types of designs, making use of light metals, special alloys or plastics. Such new designs must be carefully analyzed to see that they will satisfactorily perform their functions.

When changes were made slowly and were not radically different they could be incorporated into new equipment with little chance of causing any major difficulty. Today when changes are radically different, experience must be obtained to insure a design that will operate satisfactorily. The building and rebuilding of complete models would be impractical if not impossible from a time standpoint.

Research on elements of machines before they are built frequently spots poor designs and permits correction before the model is made. By applying all the scientific techniques to the first models to locate things which might cause trouble after a long period of usage, the development of new machinery can be telescoped into a reasonably short time.

DR. KEMLER is head of the newly created engineering research division of the Southern Research Institute of Birmingham, Ala. The new division will make available the integrated laboratories and personnel for carrying out investigations in mechanical and electrical engineering fields, which arise in connection with a sponsored research program. Dr. Kemler was connected with Dodge Manufacturing Corp., University of Pittsburgh, Gulf Research and Development Corp., Gulf Oil Corp. and Purdue University before assuming his new post. This is the second of two articles on the subject on Opportunities for Engineering Research in the South. It considers the possibilities as applied to southern raw materials and industry.

Because of the diversity of raw materials and needs of the South, a complete listing of engineering research possibilities in southern industry is impractical. The following reviews a few of the possibilities which might be of interest. Some of these items can be in themselves divided into hundreds of sub-projects, depending on the degree of specialization of the industry.

As discussed previously the application of electronic devices to machines and gadgets of all types ranks high on the list of research possibilities. The development of automatic equipment offers many possibilities which will make it necessary to carefully study and investigate basic equipment requirements and performance.

Corrosion prevention continues to be a most important and broad field. New metallurgical developments, the improvement of inhibitors and the developments in protective coatings all offer many possibilities. Corrosion problems in pipe lines of all types and in connection with wood preservation are major fields of interest to the South.

Development of apparatus for the testing of specific products such as textile yarns or textile products is an important field. Manufacturing improvements come about usually only after we improve our methods of measuring the product during the manufacturing process to see that it meets requirements.

Improvements in tools and shop processes to fit specific production problems is a field which must be continuously studied if we are to keep production at its maximum. Modern manufacturing methods require the application of the best methods of analysis of performance. Quality control as a production tool has opened a new field for the study of production performance.

The power transmission field has widened by improvements in electrical equipment and through the development of hydraulic transmission equipment such as fluid couplings, and hydraulic control devices. The gas turbine as a power generating source has come a long way during the war.

New materials are continually being developed which permit radical changes in manufacturing procedures. Welding of metals and moulding of plastic products offer extensive fields for design developments. The improvement of factory lighting and improved heating equipment offer opportunities for industries in these fields. Noise and vibration studies in the manufactured product are becoming increasingly important and necessary in products for the factory, as well as for the home.

Improvements in transportation and freight handling equipment are

(*Continued on page* 88)

Above—Logan Basic College of Chiropractic designed by Marcel Baulicault, St. Louis, Mo.

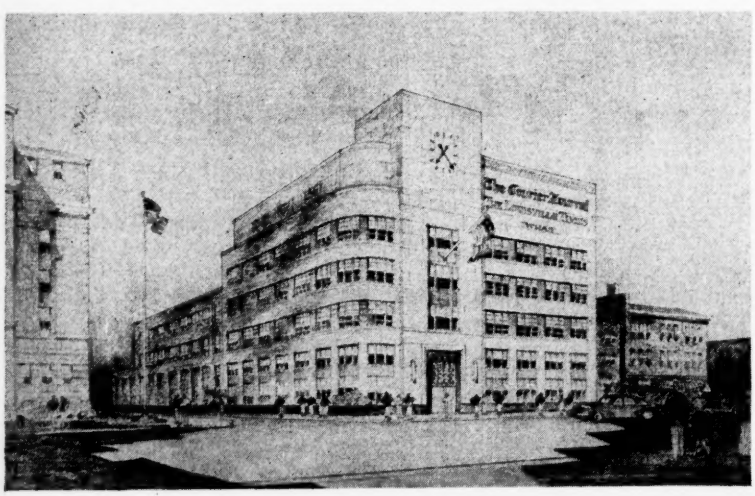
SOUTH'S CONSTRUCTION REMAINS STEADY

by
Samuel A. Lauver

SOUTH'S CONSTRUCTION BY TYPES

	November, 1945 Contracts Awarded	1945 Contracts to be Awarded	Contracts Awarded First Eleven Months 1945	Contracts Awarded First Eleven Months 1944
Alabama	$1,346,000	$18,310,000	$98,044,000	$32,269,000
Arkansas	576,000	21,429,000	9,934,000	67,796,000
Dist. of Col.	1,601,000	175,000	30,808,000	19,341,000
Florida	9,838,000	23,727,000	68,512,000	78,748,000
Georgia	15,315,000	30,862,000	47,980,000	42,088,000
Kentucky	4,048,000	7,655,000	20,202,000	21,243,000
Louisiana	2,651,000	21,487,000	52,780,000	57,339,000
Maryland	5,976,000	9,072,000	74,446,000	57,741,000
Mississippi	1,730,000	7,804,000	35,291,000	19,913,000
Missouri	6,144,000	36,777,000	40,323,000	43,970,000
N. Carolina	6,566,000	19,182,000	53,384,000	30,235,000
Oklahoma	2,687,000	29,413,000	31,146,000	20,690,000
S. Carolina	2,408,000	10,581,000	17,684,000	20,006,000
Tennessee	9,111,000	16,168,000	52,295,000	24,498,000
Texas	39,015,000	89,704,000	315,663,000	151,028,000
Virginia	8,701,000	8,750,000	61,905,000	80,399,000
W. Virginia	395,000	4,581,000	15,708,000	19,180,000
TOTAL	$118,108,000	$355,677,000	$1,026,105,000	$786,484,000

Below—More than three million dollars will be spent by the Courier-Journal and Louisville Times Co., publishers of Courier-Journal and Louisville Times, for the new plant illustrated. Designed by Lockwood-Greene Engineers, Inc., New York, the building will consist of two units in a six story retangular office building, 120 by 130 feet and a four story publishing plant, 175 by 200, a total space of 250,000 square feet of two buildings, all of which will be air-conditioned. The office building will be of steel construction, faced with limestone; the mechanical building of flat slab concrete. Joseph H. Kolbrook, Louisville engineer, collaborated on the designs. Serge A. Birn and Associates, Louisville industrial engineers, made some of the interior layout.



THE total of southern construction awards so far this year is $1,026,105,000, or thirty per cent ahead of the figure for the similar period of 1944. Totals for the first eleven months of 1943, 1942 and 1941, the most active years of defense and war construction were $1,413,884,000, $3,765,729,000 and $2,735,184,000, respectively.

Industrial construction, with a total of $440,547,000 accounted for about forty-three per cent of the current eleven-month total, public building, with its $220,192,000 total, for approximately twenty-one per cent of the aggregate, and engineering construction totaling $169,654,000 for about seventeen per cent.

Private building and highway and bridge construction together contributed approximately nineteen per cent to the eleven-month figure. The total for these two categories, which were the hardest hit by the drastic federal restrictions on war-time construction was $193,712,000, or $100,216,000 for highway work and $93,496,000 for private building.

The trend of southern construction last month with the value of contracts awarded below the Mason and Dixon line totaling $118,108,000, matched the figure of the preceding month and as before was more than twice the total for the comparable month of last year.

Private building almost doubled in November; industrial construction remained at about the same level as that in October; public building and highway construction dropped, as November activity pushed the eleven-month aggregate well above the bilion dollar mark.

November totals for the several types of southern construction were: Private building, $32,241,000; Industrial, $48,155,000; Public Building, $15,412,000; Engineering, $13,382,000; Roads, $8,918,000.

Despite the restrictions that have prevailed in varying degrees during much of this year, present prospects are that 1945 will be an outstanding period in peacetime construction history and those to follow will see activity unrivaled in the past. The eleven-month total is already well above the figure for the entire year of 1944.

New construction in 1946, the first

peacetime year, is expected to amount to at least $6,000,000,000, with the South sharing proportionately. The minimum in housing construction in the country is placed at $1,675,000,000.

Shortages of materials and an aversion on the part of workers to accept employment at peacetime wage levels are two of the chief obstacles to a healthy expansion of construction. These in some instances have resulted in delay in the start of large projects until conditions settle to a less inflated level.

Activity in the industrial construction field, however, continues high in the South, with a number of firms either planning or going ahead with projects involving millions of dollars. These include:

Telephone improvements, southwest, Southwestern Bell Telephone Co., $140,000,000;

Expansion program, Arkansas Power & Light Co., Pine Bluff, Ark., $20,000,000;

Expansion, various locations, Dr. Pepper Co., Dallas, Texas, $10,000,000;

Plant, St. Louis County, Mo., Lever Brothers Co., $10,000,000;

Equipment replacement, Baltimore, Md., Baltimore Transit Co., $7,500,000;

Assembly plants, Hapeville, Ga., Ford Motor Co., $6,000,000;

Expansion, Southern States Cooperative, Inc., Baltimore, $6,000,000;

Paint and varnish plant, Tucker, Ga., E. I. du Pont de Nemours & Co., $6,000,000;

Plant, Memphis, Tenn., International Harvester Co., $5,000,000;

Expansion program, Tennessee Eastman Corp., Kingsport, Tenn., $5,000,000;

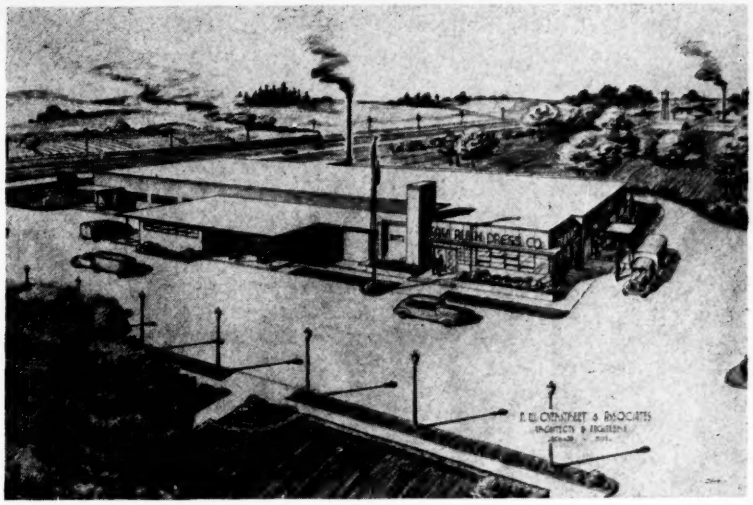
Power plant addition, Cliffside, N. C., Duke Power Co., $4,500,000;

New rail, Texas, Missouri-Kansas-Texas Railway, $3,000,000;

Newspaper plant, Louisville, Ky., Courier-Journal and Louisville Times Co., $3,000,000;

Plant, Memphis, Tenn., Missouri Portland Cement Co., $2,500,000;

Power plant, Charleston, S. C., South Carolina Power Co., $2,500,000;



Above—Clothing factory proposed at Drew, Miss. N. W. Overstreet & Associates, Jackson, Miss., are the architects.

Natural gas pipeline, Texas, Tennessee Gas & Transmission Co., $2,260,000;

Publishing plant, Dallas, Texas, Dallas Morning News, $2,000,000;

Nylon processing plant, Morristown, Tenn., Belding Heminway Co., $1,500,000;

Expansion, Vero Beach, Fla., Fellsmere Sugar Producers Association, $1,500,000;

Textile mill improvements, Avondale Mills, Sylacauga, Ala., $1,250,000;

Bottling plant, Norfolk, Va., Coca Cola Bottling Co., $1,000,000;

Research laboratory, Houston, Texas, Shell Oil Co., $1,000,000;

Plant addition, Goldville, S. C., Joanna Textile Mills, $1,000,000;

Plant expansion, Jarratt, Va., Johns-Manville Corp., $1,000,000;

Roofing granules plant, Little Rock, Ark., Minnesota Mining and Manufacturing Co., $1,000,000;

Plant, Plymouth, Fla., Florida Foods, Inc., $1,000,000;

Railway improvements, Oklahoma City, Okla., $1,000,000;

Plant, Houston, Texas, Carnation Milk Co., $1,000,000;

Bus garage and maintenance shops, San Antonio, Texas, $1,000,000;

Power plant, Danville, Va., Riverside & Dan River Cotton Mills, Inc., $900,000;

Warehouse, Houston, Texas, Auto Dealers of Houston, $800,000;

Plant extension, Burlington, N. C., Celanese Lanese Corp., $750,000;

Manufacturing and repair shop, St. Louis, Mo., Westinghouse Electric & Manufacturing Corp., $750,000;

Boiler plant, El Paso, Texas, El Paso Electric Co., $600,000;

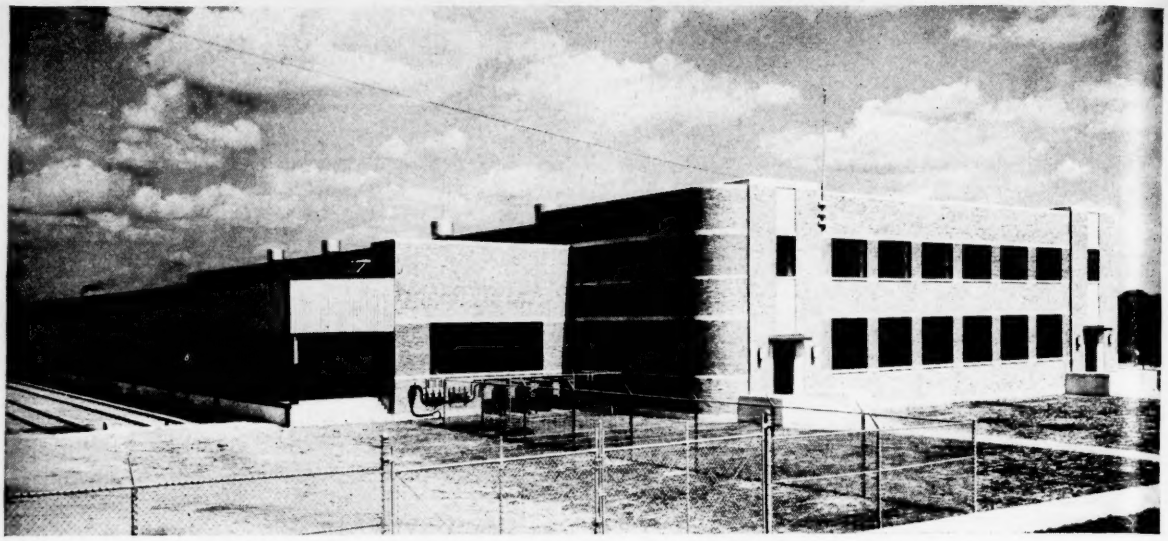
Expansion, Kansas City, Mo., Luzier's, Inc., $600,000;

Glass plant expansion, Laurens, S. C., Laurens Glass Works, $600,000;

Warehouses, Houston, Texas, Texe-

(*Continued on page* 74)

Below—Walter L. Morris, Knoxville, Tenn., awarded contract to Daugherty & Waters for construction of a new theatre to seat 1,000 people. The building was designed by Fred Manley Associates and will be air-conditioned and modern in every respect. Walls and ceiling will be acoustically treated and insulated with vermiculite, a North Carolina mineral similar in appearance to mica.



Above—Efficient production of containers in this Tampa, Fla. plant of Continental Can Co. is largely the result of efficient coordination of production machinery, handling devices and manpower.

PLANT LAYOUT AS A FACTOR IN REDUCING PRODUCTION COSTS

by
Harold A. Anderson

Eastern District Manager
The Austin Company,
Engineers and Builders
New York City

WARTIME advances in engineering techniques and improvements in available construction materials and building equipment are directly reflected in many of the designs now being adopted for new plants. Executives who guided the operations in thousands of war plants during five years of intense activity are acutely conscious of the parts which better lighting techniques, new ventilating and air-conditioning methods, more flexible power distribution facilities and the more extensive use of materials handling equipment played in their production achievements.

With the examples set by such plants, and the growing recognition of the need for giving adequate consideration to any facility which affects the health and attitude of personnel, there is every indication that the great majority of plants built in the future will offer much better working conditions than were ever within reach before this time.

But the ultimate effectiveness of any new plants, and of their production machinery as well, will depend primarily upon the way in which all the elements which they combine are fitted together into well planned working units. They must be readily adaptable to future changes, as well as adequate to the immediate needs. For that reason, it is up to designing engineers to make them just as much tools of production as the individual machines that go inside. This problem has become more and more a matter of layout.

Single-story plants are generally preferred for metal working industries, whether they are engaged in the production of unit items, which may range from table knives to 60-foot long wide band saws used in lumber mills, or complex assemblies ranging from machine tools to all types of motors and transportation equipment.

The column spacing, overhead

Below—Good layout is important to efficient handling of traffic in this aircraft company's cafeteria.

clearance and load carrying capacity of the structure, as well as the use of mezzanines, depends directly upon the character of work for which the building is intended. Obviously, the fewer columns inside the plant, the greater will be the opportunity for flexibility in machinery and production layouts. In the same way, the more clearance provided below the roof trusses, the more opportunity there is for overhead handling. But in either case, the engineer's job is to find the point at which the added costs of longer spans and higher clearances balance out with the advantages which they contribute.

In the 22 years which have elapsed since we published our first comparative study on the basic economic advantages of single-story plants, experience has proven the value of such designs to many food, process, packaging and container industries which previously favored multi-story structures because of the opportunities they offered for gravity flow of materials in process. While this study analyzed the cost of land and buildings in terms of usable space, that is only a small part of the story.

The development of larger and heavier equipment has forced many firms to face a choice between abandoning existing multi-story structures, with limited floor loading capacities and restricted column spacing, and continuing under the handicap of outmoded equipment. Some container manufacturers who had always built four-story plants, for instance, have been completely converted to one-story designs. When they put all their operations on one floor they quickly found that modern conveyors could perform all of the required handling operations with greater overall economy than their best gravity flow layouts, and that all the supposed advantages of multi-story buildings for their industry were just a myth.

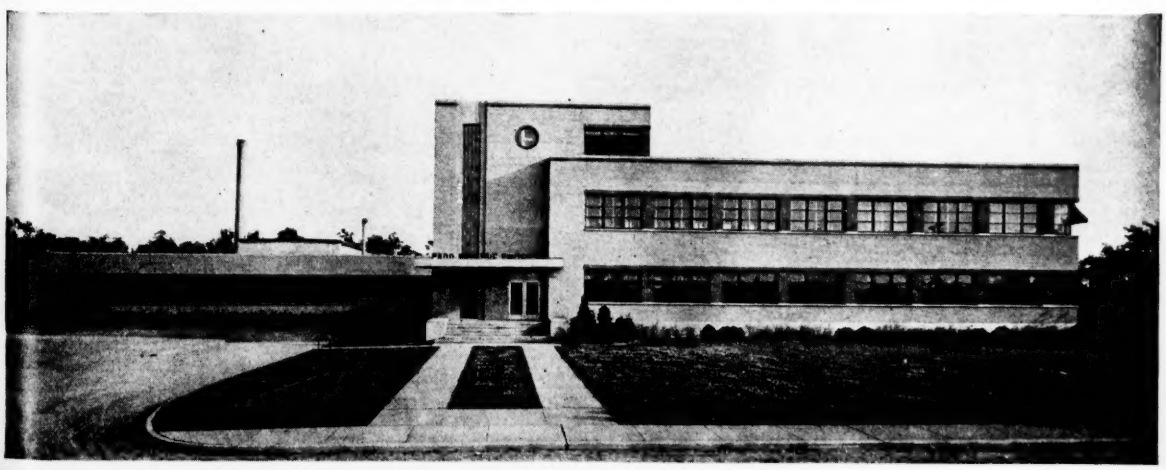
Despite the wide range of differences between industries, we approach every layout problem by first making a three dimensional analysis of the problem. This enables our engineers to develop a fundamental flow diagram in which the problem is presented in its most simplified form. Attention is concentrated on basic functions, to the temporary exclusion of secondary considerations and specific details.

In approaching the designing of administration buildings, the functional flow of human beings with respect to work areas calls for first

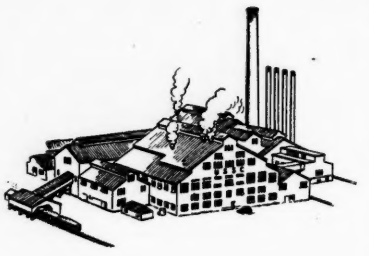
(Continued on page 72)

Above—Special ventilating ducts were provided in this cadmium plating department adjoining the main assembly bay at the Douglas aircraft plant, Oklahoma City, where accurate control of air currents in this and other processing sections eliminated need for full length partitions that would have interfered with free flowing production.

Below — Modern lines characterize this integrated plant and office layout for production of electrical equipment.



Southern Industrial Expansion



ALABAMA

Mills—Avondale Mills, Sylacauga, operator of 11 textile mills, in Alabama, contracted for new plant equipment at cost of $1,250,000; company operates plants in Birmingham, Alexander City, LaFayette, Pell City Sycamore, Stevenson and Sylacauga; equipment would include opening room equipment, new spinning machinery, new looms, air conditioning, and finishing equipment.

BIRMINGHAM — Expansion—Odum Lumger Co., acquired six-acre site having plans prepared for dry kiln and modern office.

BIRMINGHAM—Office, Etc—Alabama Outdoor Advertising Co. let contract at $20,000 for office and plant building.

DEMOPOLIS—Warehouse, Etc.—Sheffield Implement & Tractor Co. has let contract for construction of warehouse and paint shop.

DOTHAN — Expansion — Dothan Hosiery Mills, has plans underway for expansion.

MONTGOMERY—Shop Facilities—Atlantic Coastline Rwy. Co., Wilmington, N. C., let contract for construction of three buildings for shop and repair facilities in Montgomery.

MOBILE — Plant — The Ruberoid Co., building plant at cost of $500,000.

TROY—Expansion—United Telephone Co., Dothan acquired Standard Telephone and Telegraph Co.

WETUMPKA — Factory — W. F. Suttle, plans erecting $25,000 furniture plant.

ARKANSAS

HELENA — Plant — Reynolds Metals Co., Richmond, Va., interested in establishment of new plant at Helena for manufacturing aluminum railroad cars, truck bodies and trailers for use in Southeastern areas; Memphis and Chattanooga, Tenn., also under consideration.

LITTLE ROCK—Plant—Minnesota Mining and Manufacturing Co. of St. Paul, plans erection of a $1,500,000 roofing granules manufacturing plant.

LITTLE ROCK—Warehouse—Cash Wholesale Co., let contract for warehouse; cost $76,000.

OSCEOLA — Plant—The Osceola Products Co., purchased the Purina Cotton Mill and plans expansion.

SEARCY — Building—Thompson Hatchery constructing new building at cost of $50,000.

FLORIDA

ABURNDALE — Plant—William P. MacDonald Corp., Lakeland, Fla., and Long Island, N. Y., let contract for citrus sectionizing plant, office building and garage at cost of $250,000.

GAINESVILLE—Plant—H. R. Gertner will erect $14,000 cold storage plant.

JACKSONVILLE — Plant—Gaylord Brothers started work on printing shop; $12,000.

JACKSONVILLE — Telephone Exchange—Southern Bell Telephone and Telegraph Co., Atlanta, has let contract for construction of new dial central office exchange here.

MIAMI—Building—Florida Engineering & Dry Dock Co., will construct $20,000 fabricating building.

MIAMI — Building—Robins-Freedman Co., Miami Beach, will construct one-story factory building.

MIAMI—Industrial Building—W. T. Rose, let contract for industrial building; cost $32,000.

MIAMI — Warehouse—General Mills, Inc., let contract for warehouse.

MIAMI—Warehouse—Gulf Drug Sales Co., will construct warehouse.

MIAMI — Warehouse—Purity Condiments Co. has let contract for erection of warehouse; cost $35,000.

MULBERRY — Water System — International Mineral & Chemical Corp., let contract for water supply system, cost approximately $100,000.

ORLANDO — Factory—Southern Manufacturing Co., let contract for factory.

PLANT CITY — Plant—Southlands Products, Inc., plans refrigeration plant.

PLYMOUTH—Plant—Florida Foods, Inc., Boston 15, Mass., has under way processing plant, estimated cost, including equipment, $1,000,000.

TAMPA—Factory Building—ABC Steel Co. has let contract for construction of factory building.

WINTER HAVEN — Plant—Swift & Co., Chicago, Ill., plans milling plant; revising plans.

GEORGIA

ATLANTA—Addition—Allen & Vickers let contract at $23,000 for addition to present building.

ATLANTA—Ice Plant Addition—Frigidice Co., let contract for additions to ice plant to cost $20,000.

ATLANTA — Plant—Huttig Sash & Door Co., St. Louis, plans building, including factory, office space to cost $500,000.

AUGUSTA—Mill—Augusta Veneer Co., let contract at $27,064, for lumber mill.

CHICKAMAUGA — Telephones —H. W. Vaughn and Earl McDonald, both Fayette, Ala., acquired Chickamauga Telephone Co., plan improvements.

COLUMBUS—Addition—The A. K. Adams Contracting Co., Atlanta, has building permit for five story brick addition to Muscogee Manufacturing Co., cost $100,000.

HAPEVILLE — Plant — Ford Motor Co., Dearborn, Mich., broke ground for new assembly plants costing approximately $6,000,000.

MACON—Factory—Macon Cabinet Works, erecting by day labor, 15,000 sq. ft. factory space and lumber dry kiln, cost $40,000.

MACON—Plant—Armstrong Cork Co., Lancaster Pa., acquiring land for erection of plant for manufacture of structural insulation board and kindred products.

MACON — Plant—Macon Cabinet Works, started work on expansion of plant; work will include two new wings, new machinery, etc., cost $30,000.

MILLEDGEVILLE — Radio Station—Hansell Hall, has contract for radio broadcasting station, cost approximately $10,000.

SANDERSVILLE—Mill—O. D. Padgett will install mill for grinding livestock and poultry feed.

SAVANNAH — Addition—Southern States Iron Roofing Co. plans additions and improvements.

SAVANNAH—Plant—Georgia Ice Co., will erect quick freeze plant.

SAVANNAH — Plant—Turpentine & Rosin Factors, Inc., plans gum turpentine packaging plant with annual capacity of 3,000,000 gallons, adjacent to present operation.

KENTUCKY

LEXINGTON—Plant—General Electric Co., Schenectady, N. Y., has let contract for construction of plant to manufacture glass for lamp department.

LOUISVILLE — Equipment—Tube Turns Inc., will purchase and lease $3,500,000 of Defense Plant Corporation equipment which will be re-converted to peace-time use.

LOUISVILLE — News and Radio Bldg.—Contract has been let for construction of building to house the Courier Journal, Louisville Times, Radio Station WHAS and Standard Gravure Corp.; cost approximately $3,000,000.

LOUISVILLE — Plant—Reliance Varnish Co., will erect $30,000 synthetic-resin factory first unit of a complete new plant.

LOUISIANA

ABBEVILLE—Plant—Lloyd Smith, has acquired site and plans erection of a milk-cooling plant; estimated cost $20,000.

ALEXANDRIA — Building—Goodyear Tire & Rubber Co., plans building, cost $25,000.

ALEXANDRIA — Building—Parks Manufacturing Co., plans cabinet factory.

ALEXANDRIA—Plant—A. C. Highers, Jr., let contract at $78,490, for plant building for Dr. Pepper Bottling Co.

BATON ROUGE — Building — Louisiana Lumber Co. has let contract for construction of new building; cost $17,639.

BATON ROUGE—Plant Structure—Ronald A. Coco, let contract for new shop and supply office building; cost $42,378.

FERRIDAY—Plants—California Oil Co., operating in Lake St. John oil field, plan new recycling plant at cost of $500,000; similar plant also proposed in Cranfield oil field of Adams County Miss.

LAKE CHARLES—Plant—H. L. Guth, let contract for $18,000 milk pasteurizing plant.

NEW ORLEANS — Plant—Continental Can Co., has acquired site, for construction of bottle cap and cork plant.

SHREVEPORT — Warehouse — Morris-Dickson-Co., let contract for construction of $40,000 warehouse.

MARYLAND

ANNAPOLIS—Broadcasting Station—Capital Broadcasting Co., plan broadcasting station in Annapolis.

BALTIMORE—Addition—Daylight Terminal Co., let contract, for addition to building; cost $10,000.

BALTIMORE—Addition—Sun Spot Co. of America has let contract for construction of addition to building; cost $20,000.

BALTIMORE—American Lumber & Treating Co., announces new plants to be opened at Baltimore and at Florence, S. C. Capacity of the Baltimore plant will be about 2,000,000 ft. monthly; of the Florence plant, between 7,000,000 and 10,000,000; the plants will be equipped to pressure treat all types of commercial lumber with coal tar, creosote, Wolman or Minalith salts.

BALTIMORE — Dryer Units — Baltimore Brick Co., will erect 2 dryer units; cost $[illegible]0,000.

BALTIMORE — Expansion — Southern States Cooperative, Inc., will expend $6,000,000 on expansion program during the next two years; largest expenditure would be $2,000,000 for new and modern feed mill in Baltimore and construction of a fertilizer plant at Nashville, Tenn.; amounts also allocated for increasing Cooperative's marketing program and for establishing additional food locker plants.

BALTIMORE—Plant—Merchants Terminal Corp., will erect ice manufacturing plant; cost $40,000.

BALTIMORE — Warehouse — Alfred J. Harris, let contract for warehouse; cost $[illegible]6,000.

BALTIMORE COUNTY—Building—Calvert Distillery, Relay, let contract for addition to evaporator building; cost $10,000.

MISSISSIPPI

CALHOUN CITY—Factory—City will erect a $60,000 plant for manufacture of woolen trousers.

MONTICELLO—Plant—City plans acquiring land for erection of building to house garment plant; $25,000 bond issue voted.

JACKSON—Plant—Mississippi Agricultural and Industrial Board, authorized Beats 1, 2 and 3 of Pearl River County to vote on $80,000 bonds for garment plant.

NATCHEZ—Plant—The California Oil Co. plans establishing recycling plant; orders placed for equipment; cost $500,000; similar plant is proposed in the Cranfield oil field of Adams county.

QUITMAN—Mill — Holeproof Hosiery Co. of Milwaukee, building new mill.

MISSOURI

COLUMBUA — Oil Plant—The Missouri Farmers Association Oil Co. will construct $75,000 building, to house offices and oil processing plant.

GRANDVIEW—Plant—Dowell Manufacturing Co., has acquired a tract of land for erection of manufacturing plant; investment, including cost of building and new equipment will be approximately $300,000.

KANSAS CITY—Expansion—Luzier's, Inc., plans tripling production caapcity; cost $600,000.

KANSAS CITY — Plant—Clipper Manufacturing Co. will erect $100,000 building.

ST. LOUIS—Addition—Stilecraft Manufacturers, erect factory addition.

ST. LOUIS—Addition—Wilbert Vault Co., let contract for addition to factory; cost $15,000.

ST. LOUIS — Addition & Office—Lambert Pharmacal Co. has let contract for manufacturing and office building addition; cost $75,000.

ST. LOUIS—Building—Drug Package Co. let contract for manufacturing building addition.

ST. LOUIS—Engines—Gulf, Mobile & Ohio Railway, will purchase $3,000,000 in Diesel motive power.

ST. LOUIS — Shop—Westinghouse Electric & Manufacturing Corp., plans manufacturing and repair shop; shop will manufacture switchboards and panel boards, cost $450,000; warehouse, cost $300,000.

ST. LOUIS — Warehouse — Caine Steel Co., Chicago, Ill., acquired site for erection of $200,000 warehouse.

SPRINGFIELD — Buildings — Lipscomb Grain & Seed Co., let contract at $60,240, for additional bulk grain storage plant.

WEST PLAINS—Plant—Dwight Richards of Chamber of Commerce in charge of plans

for building for International Shoe Co. St. Louis, will begin construction soon.

NORTH CAROLINA

Oil—The Standard Oil Co. of New Jersey, plans to drill for oil off the coast of North Carolina, Cape Hatteras.

ASHEBORO—Factory—McLaurin Hosiery Mill, branch plant of Burlington Mills Corp. of Greensboro, starting work on $70,000 addition.

BELMONT—Extension—Belmont Converting Co., has let contract for filter plant extension; cost $59,925.

BOONEVILLE — Mill—E. W. Burcham, Elkin, has let contract for construction of weaving mill at Booneville; cost approximately $25,000.

BURLINGTON—Addition—Long Finishing Mill has let contract at $100 000 for addition.

BURLINGTON — Mill — Celanese Lanese Corp., let contract for erecting extension to present plant to expand existing carding and spinning facilities; later plan additions to picker-house, yarn conditioning section, shipping room and installation of boiler house; cost $750,000.

CANTON — Addition—Champion Paper & Fiber Co., let contract for addition to plant.

CHARLOTTE — Building—Dixie Tag & Envelope Co., will erect $100,000 plant.

CHARLOTTE — Expansion—Ace Elevator Co., has acquired building; will improve and install equipment.

CHARLLOTTE—Hatchery—R. C. Pittman of Landis and William Wren, Siler City, acquired site for hatchery; $25,000.

CHARLOTTE — Hosiery Plant—Belvedere Hosiery Co., plans $500,000 hosiery plant.

CHARLOTTE—Mill—The Carolina Process Co., of Mount Holly, acquired site for erection of $100,000 plant.

CHARLOTTE — Plant, Etc. — Johnson Chemical Co., let contract at $20,000 for plant and office buildings.

CHARLOTTE — Plant—Wanco Hosiery Mill Co., plan erection of plant at Charlotte.

CHARLOTTE — Textile—Elizabeth Textile Co. capital $100,000, chartered by Howard W. Glasgow; develop textile manufacturing plant.

CHINA GROVE — Addition — China Grove Cotton Mill, will start work soon on new unit of 15,000 spindles.

DURHAM—Building—Nu Tread Tire Co., acquired site for erection of modern tire recapping service and tire sales building.

ELIZABETH CITY — Plant—Mengel Co., Louisville, Ky., acquired Foreman-Derrickson Veneer Co., together with approximately 10,000 acres of harwood timber land.

GASTONIA — Hosiery Mill—Gastonia Full Fashion Hosiery Mill has let contract for construction of new mill.

GREENSBORO — Plant—Transport Packings Corp. has let contract for construction of manufacturing plant.

HIGH POINT — Plants—Melrose Hosiery Mill, has plans and will soon award contract for two new buildings and an addition to Glenn Plant and full fashioned plant.

KERNERSVILLE — Addition — Southern Silk Mills let contract at $65,000 for addition to weave room.

KERNERSVILLE — Factory — Southern Silk Mills, Inc., let contract building to join present plant cost $250,000.

KINGS MOUNTAIN — Plant—Boshamer, Inc., plan erection of plant, $100,000.

LEAKSVILLE—Plant—Home Lumber Co., incorporated with $50,000 capital by J. D. Harbour constructing plant and lumber yard.

NORTH WILKESBORO—Plant—Carolina Mirror Co., let contract at approximately $150,000, for manufacturing plant.

PORT CITY—Building—Port City Hosiery Mills, Inc., has leased as temporary quarters, former employment office of North Carolina Shipbuilding Co.; will manufacture nylon hose.

REIDSVILLE—Expansion—The Chase Bag Co., will add 12,000 square feet to plant.

ROCKINGHAM—Plant—S. A. Hallum interested in freezer locker plant and abattoir.

ROCKY MOUNT—Plant—Liggett & Myers Tobacco Co., let contract for redrying plant; cost $300 000.

SHELBY — Plant — Smith-Douglass Co., plans $500,000 plant.

TARBORO—Publishing—Hill-Parker Publishing Co., capital $60,000, incorporated by Fred Hill, publish newspapers.

WAYNESVILLE—Building—R. N. Barber let contract at $57,822, for cold storage building.

WHITEVILLE—Plant—Riegel Paper Co., New York having surveys made in Columbus County for erection of multi-million dollar pulp and paper factory; surveys are exploratory to secure data on soil, water, etc.; surveys are being centered in vicinity of Acme in western portion of Columbus County.

WILMINGTON—Coaling Station—Ross & White Co., Chicago, Ill., has contract for modern reinforced coaling station at Smith Creek yard of Atlantic Coast Line railroad company; cost $89,000.

WILMINGTON — Hosiery Mill—Industrial Properties, Inc., Owner; Port City Hosiery Mills Co. Lessee, let contract for hosiery mill at $100,000.

WINSTON-SALEM — Bakery — Lingle's Bakery, let contract for $30,000 building.

WINSTON-SALEM — Warehouse—Forsyth Warehouse Co., acquired site for erection of new tobacco auction warehouse.

OKLAHOMA

OKLAHOMA CITY—Imrovements—Jordan Petroleum Co., and Oklahoma Transportation Co., acquired The Oklahoma Railway Co., and plan $1,000,000 improvements.

OKLAHOMA CITY—Plant—W. & W. Steel Co., now constructing plant; have 5-acre site.

TULSA—Radio Station—New building, cost approximately $75,000, will be erected to house studios of station KOME.

SOUTH CAROLINA

CHARLESTON—Freezer Locker Plant—Saint Andrews Freezer Locker Co. let contract for erection of plant; cost, exclusive of equipment and plumbing, $28,768.

COLUMBIA—Warehouse—Hartley Grocery Co., let contract for grocery warehouse at $64,700.

GREENVILLE — Building — Greenville Truck and Tractor Co., will erect plant.

GREENVILLE—Plants—Deering, Milliken Co., will build two new plants.

ROCK HILL—Plant—J. E. Marshall will erect cement block manufacturing plant on Saluda Highway.

SPARTANBURG—Addition—Joanna Textile Mills have let contract for addition.

SPARTANBURG—Mill—Crescent Corporation of Fall River, Mass. acquired Whitney textile mill; structures of the plant will be utilized as headquarters for the Crescent Co. in this territory; establish machine shop for maintenance and repair of textile equipment.

SPARTANBURG — Plant — Hammond-Brown-Jennings Furniture Co., has $50,000 improvement and renovation program underway.

TENNESSEE

FRANKLIN — Addition — Williamson Locker Storage Co., will erect $50,000 addition to locker plant.

KINGSPORT — Expansion — Tennessee Eastman Corporation has expansion program underway, calling for expenditure of more than $5,000,000 during each of the years of 1946 and 1947.

MADISON — Plant — R. I. McGaugh has building permit for food locker plant at cost of $40,000.

MANCHESTER — Plant — C. M. Lynch, Memphis, interested in erection of frozen food locker plant.

MEMPHIS—Building—Southern Co., Inc., let contract for modern office, warehouse and shop building; cost $30,000.

MEMPHIS—Cars—Memphis Street Railway Co., has contracted for 100 electric coaches, of 45-passenger seating capacity each.

MEMPHIS—Cement Plant—Missouri Portland Cement Co., St. Louis, Mo., plans 750,000 barrel capacity plant here; estimated cost $2,500,000.

MEMPHIS—Plant—Carlton Smith Industries, operating at Beardon, Ark., are erecting plant here for manufacture of furniture.

MEMPHIS—Plant—International Harvester Co., Chicago, Ill., has completed grading and drainage system construction; work in connection with new $5,000,000 plant.

MEMPHIS — Plant & Warehouse — Mid-South Oil Co. building bulk plant and ware house; cost $175,000.

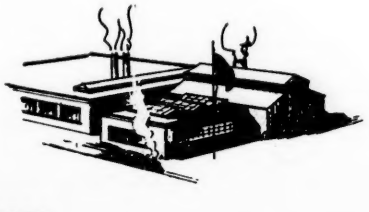
MORRISTOWN — Plant — Belding Heminway Co., New York will operate $1,500,000 nylon processing plant to be constructed here next spring.

MURFREESBORO—Trailer Service Plant—Carter Manufacturing Company, Memphis, let contract for trailer service plant including office space.

NASHVILLE—Plant—Southern States Cooperative, Baltimore, Md., plans erecting $475,000 fertilizer plant.

TEXAS

Rail — Missouri-Kansas-Texas Railway Board, St. Louis, will purchase 146 miles of new 112 pound rail at cost of approximately $3,000,000 for improvements of main line in Texas and Oklahoma.



ABILENE—Bottling Plant—Orange Crush Bottling Co. has let contract for construction of plant; cost approximately $20,000.

BEAUMONT & HOUSTON—Southwestern Bell Telephone Co. has let contract for construction of repeater stations between Houston and Beaumont.

BROWNSVILLE—Processing Plant—F. H. Floyd let contract to Noser Construction Co., McAllen, for one-story brick and tile building; work started.

CORPUS CHRISTI—Addition—E. A. Jones has let contract for addition and alterations; cost $47,365.

CORPUS CHRISTI—Building—Roy Murray Motors let contract for construction of new automobile building; cost approximately $100,000.

DALLAS—Building—Dr. Pepper Co., let contract for new factory and office building; estimated cost $1,000,000.

DALLAS—Building—Director of the State Fair of Texas, R. L. Thornton, Pres., authorized issuance of $600,000 bonds for construction and rehabilitation of exhibits building, Fair Park.

DALLAS—Business Building—Dallas Terminal Railway & Union Depot, Inc., will erect business building.

DALLAS—Laundry Plant—Charles S. Bell, let contract for laundry and cleaning plant, to cost $40,000.

DALLAS—Factory—Falcon Furnishing Co., acquired two buildings for metal furniture factory.

DALLAS — Mill — Gastonia Combed Yarn Corp., purchased entire capital stock of Morowebb Cotton Mill at Dallas.

DALLAS—Newspaper Plant—Dallas Morning News, plan newspaper plant; cost approximately $2,000,000 including equipment.

DALLAS—Office and Material Yard—Lester Watson, erecting office and material yard to cost $10,000.

DALLAS—Plant—Prior Products, let contract for corrugated asbestos siding manufacturing plant.

DALLAS—Storage—W. W. Caruth has let contract for construction of storage building; cost approximately $30,000.

DALLAS—Terminal—John R. West, completed survey for site for new Union terminal.

DALLAS—Warehouse—Texas and Pacific Railway has let contract for construction of masonry warehouse; cost $70,000.

DENTON — Plant — Co-Operative Frozen Foods plan construction of $20,000 building.

FORT WORTH — Addition — Roswell Dairies has work underway on business building addition, cost $17,500.

FORT WORTH—Telephone—Southwestern Bell Telephone Co., will expend $2,500,000 for improvements to Fort Worth telephone system.

GARLAND — Laboratory — Engineering Laboratories, Inc., Tulsa, Okla., will erect a $100,000 plant in Garland for manufacture of aircraft and geophysic parts.

HOUSTON — Factory Building — Byron Jackson Co. has let contract for erection of factory building; cost approximately $90,000.

HOUSTON—Office Addition—Humble Oil & Refining Co. has let contract for two-story addition to present building; cost approximately $150,000.

HOUSTON—Office and Warehouse— McKesson & Robbins, Inc., let contract for office and warehouse building to cost $400,000.

HOUSTON—Radio Telephone Unit—Federal Communications Commission granted permission to Southwestern Bell Telephone Co., to build an experimental land radio telephone station and to install 150 mobile radio telephone stations on vehicles and harbor craft.

HOUSTON — Research Laboratory — Shell Oil Co. has let contract for construction of exploration and production research laboratory; cost approximately $1,000,000.

HOUSTON—Shop Building—Southwestern Greyhound Lines has let contract at approximately $200,000 for construction of new shop building.

HOUSTON—Shop Building—Armco Drainage & Metal Products Co. will construct steel building; cost approximately $124,000.

HOUSTON—Warehouse—Continental Can Co., let contract for warehouse; cost approximately $200,000.

HOUSTON—Warehouse—Rutherford Duplicator Co., let contract for warehouse; cost approximately $50,000.

HOUSTON — Warehouse, Etc. — Peaslee-Gaulbert Corp., let contract at $185,950 for warehouse and show room.

HOUSTON — Warehouses — Texestate Corporation, has three acre site for construction of four warehouses to cost $600,000.

HOUSTON—Warehouse—Uvalde Rock Asphalt Co., let contract at $32,785, for warehouse and storage facilities.

NEDERLAND—Plant—Consolidated Frozen Food Locker Co. of Beaumont, conferring with local committee for site convenient to

(Continued on page 72)

Rubber Company Acquires Virginia Rayon Cord Plant

UNITED States Rubber Company has purchased the government-built rayon processing plant at Scottsville, Va., for the sum of $1,837,500, it has been announced by Herbert E. Smith, president of the company.

Built in 1944 at a cost of approximately $2,300,000, the plant employs 350 persons and is now turning out rayon cord at the rate of more than 1,900,000 pounds a month.

The rubber company becomes owner of the complete plant, including an ultra-modern brick building containing 125,500 square feet of floor space located on a 66-acre site, and textile machinery which includes 25 looms, 15,000 ply twisting spindles and 11,000 cable twisting spindles.

The Scottsville plant was built by the Defense Plant Corporation of the RFC to speed up the production of rayon cord for heavy-duty military tires. It has been operated under lease by United States Rubber Company, with O. L. Ward in charge as superintendent. Originally designed to produce 1,200,000 pounds of tire cord per month, the plant is now exceeding that rate by more than 700,000 pounds per month as the result of new time-saving methods of cord manufacture instituted by the company.

The company has hired and trained local labor without previous textile experience. The plant will continue to operate at capacity, with the present payroll of 350, Mr. Smith announced. The purchase in-

(Continued on page 69)

Above—Yarn inspection.

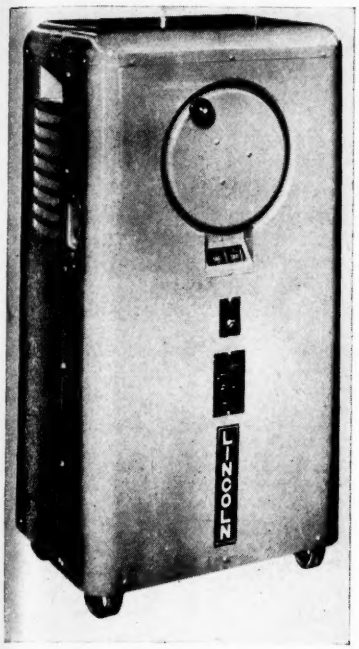
Above—Tying in tire cord loom.

Right—Tying in a beam of rayon yarn.

Below—Interior view of Scottsville, Va. rayon tire cord plant, which United States Rubber Co. has purchased from the federal Government, showing 1,000-pound beams of filament rayon being processed into tire cord.

News from Industry

New Lincoln Welder



Lincoln "Fleet-Arc Jr."

The "Fleet-Arc Jr.", a new welder for rural power lines has been announced by The Lincoln Electric Co., Cleveland, O. The new unit is for 230 volt, single phase power lines and has maximum input current of 35 amperes. Incorporated in the device is a development known as the "arc booster." When the electrode touches the work the welding current is given an intensity boost for starting the arc, after which the current reverts to the amount set for the job. Output voltage is limited to 52 volts and either of two degrees of arc boosting is provided by a snap switch. Current control is of adjustable type, varied by a handwheel. Weight 360 pounds. Full information can be obtained by addressing the Lincoln firm.

Labor Savings Studied

A booklet, "Labor Savings in American Industry" authored by Solomon Fabricant and published by National Bureau of Economic Research, 1819 Broadway, New York 23, N. Y., presents a study of technological advances made during the period 1899-1939. The study concludes that between these years the total product of American economy increased approximately 200 per cent while the number of workers increased 75 per cent. Thus, in 1939 far fewer workers were required to produce a given volume of output than in 1899, forty years earlier.

D4 Tractor Spotting Railroad Cars

Tennessee Eastman Expands

Production facility expansion involving over $10,000,000 expenditure during 1946 and 1947 is programmed by Eastman Corp., Kingsport, Tenn., according to announcement by James C. White, president of the company. Three new buildings are scheduled for beginning July 1, 1946. One of these, a six-story brick and concrete structure will house cellulose production. Another will turn out acetate yarn and a third will produce acetate staple. Thirty per cent increase in yarn and cellulose plastic capacity is envisaged for 1947.

Package Tester Announced

The L. A. B. Corp., Summit, N. J., announces a test table that vibrates and shakes like a freight car to test packages and products to aid in making sure they arrive in good condition. Freight car bumps and jolts are said to cause a substantial part of the damage loss claims expected to reach $100,000,000 this year and package testing devices are suggested for reducing this loss. It is reported that overseas shipping losses up to V-J Day were cut 90 per cent by better packaging.

Treasurer Elected

George E. Diamond has been elected treasurer of the Washington Steel Corporation, Washington, Pa., it has been announced by T. S. Fitch, president. Mr. Diamond formerly was comptroller of the Jessop Steel Company, Washington. The Washington Steel Corporation is a new company that will produce stainless steel in both sheet and strip form. New techniques and equipment will make it possible to produce stainless steel in very light gages and the company will specialize in the production of ribbon-thin sheet and strip.

G. E. Diamond

G. S. Myers

Joins Engineering Staff

G. S. Myers has joined the staff of Eshelman & Potter, combustion and chemical engineers of Birmingham, Ala., and Charlotte, N. C., it has been announced. A graduate of Georgia Tech, Mr. Myers has seen service with TVA, Commonwealth & Southern Power Co., and Tennessee Electric Power Co. As service engineer his work will embrace both Hagan combustion control and Hall Laboratories water conditioning.

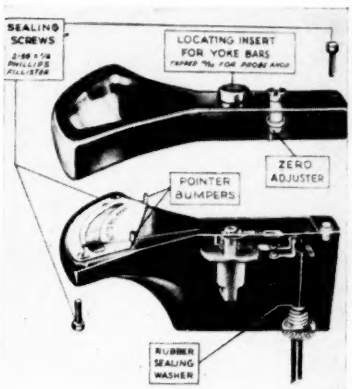
Big Furnaces Being Built

Rust Furnace Co., Pittsburgh, Pa., reports that it has begun construction of three large industrial furnaces for Chicago Bridge & Iron Co., at Chicago, Ill., Greenville, Pa., and Birmingham, Ala. The first two will be used for the stress relieving of welded pressure vessels. The one at Birmingham will serve primarily for the heating of heavy plates prior to forming, and for alloy heat treating at high temperatures.

Tractor Proves Useful

The Werk Road plant No. 2 of Aluminum Industries, Inc., northwest of Cincinnati uses a Diesel-powered track-type tractor in its plant yards. Equipped with a traxcavator, the tractor is used to load dross from the stockpile into containers, a job that formerly required ten men. A winch on the tractor makes it possible to spot railroad cars and in winter the tractor is used with a snowplow.

Fluxmeter Described



Marion Electrical Instrument Co., of Manchester, N. H., has issued details of its direct-reading magnetic Fluxmeter which was developed during the war. Developed primarily as a precise measurement device for the field strength of magnets, it is described as being useful to measure magnetic fields and gaps one-half inch or greater within range of 1,200 to 9,600 gauss. It consists of two D'arsonval instruments connected in series provided with shunts, current and range selection controls. It is represented to require no leveling or special search coils and to be completely direct-reading in gauss. It weighs six and a half pounds, and has a carrying case of oak, five by six by ten and a half inches in size.

Made Cotton Mill Director

John M. Hughlett of New York, recently appointed General Sales Manager of Riverside & Dan River Cotton Mills, Inc., was made a vice president of the corporation at a meeting of the board of directors in Danville, Va., George S. Harris, president and treasurer, announced recently.

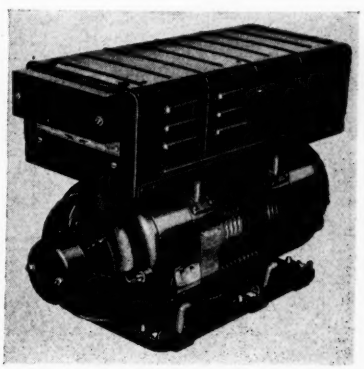
Jack & Heintz Inverter for A.C. Aircraft Current

With the announcement of expanded manufacturing and laboratory facilities for the development and fabrication of precision aircraft accessories and equipment, Jack & Heintz, Inc., Cleveland, Ohio, introduces the first of a series of D.C.-A.C. inverters.

This new compact lightweight unit provides a great advancement in aircraft electrical systems. With substantial reduction in weight accomplished by the use of new lightweight metals and greatly simplified de-

(Continued on page 66)

Aircraft Current Inverter



News from Industry

Aircraft Current Inverter

(Continued from page 65)

sign, also with the elimination of heavy cables and complicated electrical connections, this unit promises to simplify many installation and maintenance problems encountered in today's larger aircraft.

The Jack & Heintz 2500 V. A. Inverter provides a continuous and dependable source of 400 cycle, 115 volt power for use in aircraft applications, with particular reference to radar. This unit is of the motor-generator, two bearing type, complete with control box. The motor is a 4-pole, shunt machine, with a series field for quick starting at low current, and has two interpole windings which give efficient and sparkless commutation throughout the range of loads inherent to aircraft service. The brushes give service at all practical altitudes with a minimum life of 750 hours. The six pole alternator field is equipped with amortisseur windings, which aid in maintaining good wave shape required for radar loads.

All aluminum and magnesium parts are protected against corrosion by phosphatizing or dichromating before painting. The windings are double vacuum impregnated, then baked, and are mechanically secured without reliance upon the adhesive strength of the varnish.

Mixed-flow fans are mounted on each end of the rotor shaft, and the airflow from each fan cools the direct current and alternating current sections of the machine separately, with a partial diversion of air to cool the control box. This self-ventilation is effective up to 35,000 feet altitude. The armature unit is mounted on high speed, grease packed ball bearings, which require no attention throughout their life, and is dynamically balanced to provide vibration free performance.

The inherently stable speed characteristic of the motor is closely controlled by a carbon pile speed governor, mounted on the motor end of the machine and readily accessible for adjustment.

A ribbed aluminum control box is mounted on the top of the machine by brackets which also house and shield the conductors from the machine. Relays are provided for starting and running, the starting operation is entirely automatic, and the series field is shunted out when the operational speed is attained. A carbon pile voltage regulator on a quick detachable shock mounting is located in the control box, providing close control of the output voltage over the load range.

Suitable filters are installed in the control box, which keep the conducted and radiated radio interference at a low value, as well as minimizing the alternating current ripple at the input terminals.

Dishwashers Available Soon

Automatic electric dishwashers will come off the production line during the first quarter of 1946 at Edison General Electric (Hotpoint) Appliance Co., Chicago 44, Ill., John Fellman, manager kitchen sales division has announced. The machines are described as performing eight operations, starting with a spray, then rinsing and washing.

Dishwasher Assembly Line

Institute Elects Officers

At the annual meeting held recently in Pittsburgh by Porcelain Enamel Institute of Washington, Richard H. Turk, executive vice president Pemco Corporation, Baltimore, was reelected president of the institute. Others elected: Vice presidents, H. R. Spencer of Erie Enameling Co., Erie, Pa., W. A. Barrows, of W. A. Barrows Porcelain Enamel Co., Cincinnati, O., and J. T. Penton of California Metal Enameling Co., Los Angeles, Cal. A promotional program was endorsed and predictions made at the meeting that 1946 would see substantial expansion in the uses of porcelain enamel.

Furniture Manufacturers Get Help from OPA

To encourage immediate manufacture of more furniture in the medium and low priced lines, the Office of Price Administration is preparing to permit manufacturers to increase their existing ceiling prices for these lines by varying amounts up to 20 per cent, according to a recent statement of OPA.

The program will not be formally issued until late December, OPA stated, adding that the advance notice was being given that manufacturers might begin to produce the low end items in time for the January furniture market.

It is impractical to estimate the effect on consumer prices, according to OPA, until such time as conferences are held between representative wholesalers and retailers, but there is intimation in the OPA statement that there will be some "squeeze" on both wholesalers and retailers, a pattern that is familiar to those dealing with the price-fixing body.

Hoge Heads Jones Foundry

W. A. Jones Foundry and Machine Co., 4401 Roosevelt Rd., Chicago 24, Ill., has announced the election of F. H. Hoge, formerly vice president, to succeed William Coleman, resigned, as president of the company.

G M & O Officers Elected

S. A. Dobbs of St. Louis and H. E. Warren of Mobile were promoted to vice presidencies at the last meeting of the board of directors of the Gulf Mobile and Ohio Railroad. T. T. Martin of Mobile was elected assistant vice president. All three men have been connected with the company for many years.

Hitt Heads A I of G

E. G. Hitt of Atlanta has been named president of the Associated Industries of Georgia. Having joined the organization in 1933, Mr. Hitt is also vice president of the Lumbermen's Mutual Casualty Co., and American Motorists Insurance Co., also president of Associated Mutuals of Georgia.

Color Aids Workers

Color experts who survey industrial plants, tell where "right" hues should be splashed to keep up the workers' spirits and increase their output are employed by Pittsburgh Plate Glass Co., E. I. du Pont de Nemours, Sherwin-Williams and the Glidden Co.

For instance, say the experts, light blue gives a sense of spaciousness. Where women predominate, the paintologists prescribe turquoise and beige tints on walls, equipment to cut eyestrain, waste.

Warm yellow and red are advised for dark corners and sections of factories which must be kept cool, green for rooms where indoor temperatures must run high.

Skid-Rols Announced

Techtmann Industries, 828 North Broadway, Milwaukee, Wis., has announced the development of "Skid-Rol" dollies, designed for positioning in pairs beneath jacked-up machines, tanks, boxes, steel blocks, dies, furnaces and other heavy objects in loads of 10 to 12 tons for shifting. Each dolly is equipped with four all-steel rollers. Roller bearings are lubricated through Zerk fittings. When inverted Skid-Rols can be used as standing dollies for moving steel beams, girders etc.

Scale Counteractant Used

Calgon, a glassy sodium phosphate developed by Calgon, Inc., Pittsburgh, Pa., is being used to counteract excessive scale formation from the cooling water in a western steel plant. One pound of Calgon is reported to be used to 40,000 gallons of water. Used in what is known as the Threshold Treatment, the chemical is reported to counteract scale formation in pipes, open hearth door frames and other vital points.

Fabricating Firm Formed

Facilities are now available at Biad Powder Metallurgy Co., 6635 Kelly St., Pittsburgh, Pa., for fabrication of filters, magnetic materials, oil-less bearings, electric contacts and structural parts of iron, steel, bronze, brass, copper and aluminum products. The organization, recently formed as a partnership by Cecil J. Bier and Art Addis, is known in such technical societies as ASM, ASTM and AIME. Mr. Addis has a background of executive process engineering and production.

Technical Service Announced

The International Nickel Co., Inc., has announced opening of a technical section of its Development and Research division in Cincinnati at 1715 Carew Tower. Richard B. Kropf, metallurgist and former district manager of Copperweld Steel Co., Hartford, Conn., is in charge to furnish technical assistance in Southern Ohio, Southern Indiana and Kentucky.

Chicago Agent Named

R. W. Phillips has been appointed commercial agent of The Virginian Railway Company at Chicago, it has been announced by R. A. Yelton, general western agent. Mr. Phillips will have his office at 1150 Marquette Building.

Radios for Christmas

General Electric expects to have dealer stores in operation in time for Christmas radio buying. Workers who produced radar and the radio fuse are getting into stride to produce table sets and other models. For Christmas buying, G. E. expects to have 10 table models, a portable and a console radio-phonograph receiver in dealers' stores.

G. E. Officials Examine Radio

(more on page 67)

Express Executives Promoted

N. Gibbs

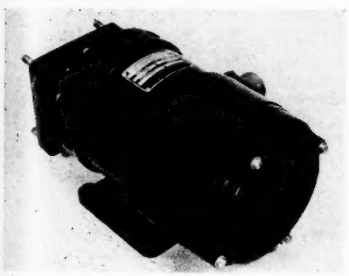
S. D. Stainton

Samuel D. Stainton, former superintendent of the Georgia division and associated with the express business for 40 years, has been appointed superintendent of organization for the Southern departments of Railway Express Agency, according to officials of the agency at Atlanta. Newton Gibbs, superintendent of organization in Atlanta, has been appointed Southern department's representative on the company Standard Practices Committee, in addition to his previous responsibilities which he has carried out since Jan. 1, 1939.

New Jack & Heintz Line

Jack & Heintz, Inc., Cleveland 1, Ohio, has announced entry into the aircraft electric motor field, with the introduction of a group of lightweight continuous duty geared electric motors, in sizes ranging upward from one horsepower. Originally designed as aircraft pump motors, they are represented as adaptable for many other similar applications.

Jack & Heintz Motor



Color Gains Importance

The importance of color is being recognized for new electric kitchens, bathrooms, kitchenware, tiling and glassware, according to a statement by Harold Wolfram, works manager Pemco Corp., Baltimore, Md., who announced that his firm has expanded facilities for resumption of color production. An innovation in the industry will be the use of spectrophotometers for color matching, Mr. Wolfram said.

Plastic Stands High Heat

The high arc resistance offered by American Cyanamid's rag filled Melmac plastic is shown by an electrical control part, used on mining machinery, which broke down because of a short circuit between main line contactors. Contrast against a stock part shows that the metal portions of the mechanism fused upon contact with the great heat, while the plastic insulation was scarcely affected. Had the insulation been destroyed, the short might have passed on to other parts of the unit, resulting in additional damage and perhaps in fire.

Joy Manufacturing Co., producers of heavy mining machinery, have adopted rag filled Melmac for use as insulation on all electrical controllers. Reasons for the selection of this molding material, according to Joy, include excellent electrical properties, heat resistance, exceptional strength and shock resistance plus the unique characteristic of resisting a nitrate deposit even when exposed to an electric arc in the presence of moisture.

Gallagher Joins Chattanooga Research Institute

Dr. Milton Gallagher, well-known research chemist, has been appointed research associate of the Industrial Research Institute of the University of Chattanooga, Tenn.

A native of Peru, Illinois, Dr. Gallagher received degrees in chemistry from the Universities of Pittsburgh and Illinois, receiving his Ph.D. from the latter institution in 1934.

While at the University of Pittsburgh he served as graduate assistant in chemistry, later being employed as a research chemist by the Atmospheric Nitrogen Corp., Syracuse, N. Y.; Tennessee Eastman Corp., Kingsport, Tenn.; and the Owens-Corning Fiberglas Corp., Newark, Ohio.

Author of many publications in the field of organic and physical chemistry, Dr. Gallagher has secured several patents in his name and is a member of the American Chemical Society and several honorary chemical fraternities and associations.

Army Man Becomes Manager

Ludlow King has been appointed manager of the Washington, D. C., office of Owens-Corning Fiberglas Corp., 1031 Investment Bldg. A veteran of the late war in which he served as lieutenant colonel and was awarded the Purple Heart for wounds sustained in Normandy, Mr. King recently retired from the Chemical Warfare Service of the Army. He succeeds C. R. Donovan who resigned the management post in Washington to establish his own business with offices at 1614 I St., Washington, D. C.

New Ideal Electric Marker

Ideal Commutator Dresser Company, Sycamore, Ill., announces a new electric marker only 6 inches long and 10 ounces in weight, life tests prove that this new marker can be used continuously on the toughest of marking jobs.

The Ideal marker operates from any AC electrical outlet. Operating like a small electric hammer, it makes 7200 cutting strokes per minute, cutting right into the surface leaving lines that cannot be wiped away or worn off with ordinary usage.

Dip Formulas Developed

Waverly Petroleum Products Co., Drexel Bldg., Philadelphia 6, Pa., have developed several processes known as troxide bright dip formulas designed to eliminate the hazards of bright dip formulas consisting of sulfuric and nitric acids. The company offers the services of its laboratories to determine the proper dip for each job. Further information on Troxide dips is available by writing to the company.

Manager Appointed

Appointment of G. V. Woody to succeed R. C. Newhouse as manager of the Allis-Chalmers basic industries department has been announced by W. C. Johnson, vice president in charge of the general machinery division. Mr. Newhouse will be retained as a consulting engineer. Mr. Woody who has served in executive capacity with the firm since 1934, is a member of AIME, AISE and Engineers Society of Western Pennsylvania, and the Eastern States Blast Furnace and Coke Oven Association.

Alcoa Research Director Gets Coveted Medal

Dr. Francis C. Frary, Director of Research of Aluminum Company of America, has been elected to receive the Perkin Medal in recognition of his outstanding accomplishments in the field of industrial research, it was announced recently by Cyril S. Kimball, Secretary of the American Section of the Society of Chemical Industry. Presentation of the medal will take place at a dinner meeting of the society at the Hotel Commodore, New York, on the evening of January 11, 1946.

Dr. Frary is the fortieth member of a group of distinguished scientists to receive the Perkin Medal, and the second Alcoa scientist to be so honored. In 1911, Charles Martin Hall was awarded this coveted medal for his development of the present day process for the manufacture of aluminum.

A 700-pound load of sacked cement being wheeled on a new type cast aluminum truck now being produced by Northrop Gaines, Inc., subsidiary of Northrop Aircraft, Inc. It is fitted with rubber-tired wheels.

Aircraft Power Generation At Wider Speeds

Electric generators developed by Westinghouse for airplanes are now being asked to provide full power over a speed range of three to one instead of two to one. The top speed remains about the same—9000 rpm. But full output is expected at speeds down to 3000 instead of 4500 rmp. This trend results from a desire to supply more of the loads during taxiing, landing, and cruising from the generators instead of from the battery. This changed requirement increases the difficulty of providing good voltage regulation, particularly at the high speed. Mechanically the generators have been improved to make them easier to mount and dismount. A new mounting flange has been designed so that holding bolts can now be put into place before the generator is slipped into position.

Portable Belt Conveyor

An "all-purpose," inclined, declined or horizontal portable belt conveyor designed for carrying bags, boxes, crates, cartons and similar items, is announced by Standard Conveyor Co., North St. Paul 9, Minn. It is represented as being adjustable to various elevations and angles and to be capable of carrying commodities wider than the belt inasmuch as the belt travels above its sidebed frame. Known as the "Handibelt," it is said to have ample capacity for 110-pound bags or boxes, or a continuous load of 20 pounds per foot. As a horizontal conveyor it is suggested as an individual unit to reach from one fixed position to another, as a connecting link between other conveyors or as a feed conveyor.

Standard Portable Belt Conveyor

TRADE LITERATURE

EVANS BOOKLET ISSUED

A question-answer form of booklet has been issued by Evans Products Co., Fullerton at Greenfield, Detroit 27, Mich., which answers questions based on inquiries received from the field about Evans Thermo-Control fans. Fifteen pages are devoted to these questions and their answers.

SAW TOOTH SHARPENER

An unusually rigid grinder for sharpening inserted teeth of circular saws and designed to grind accurately to within .001 inch has been announced by Espen-Lucas Machine Works, Front & Girard Ave., Philadelphia 23, Pa. It is listed of capacity to handle blades, 18 to 48 inches, with possibility of increase to 60 inches and requires three-quarter horsepower motor to operate. Floor space seven by fifteen feet. A bulletin available on request to the company supplies additional details.

IDEAL COMMUTATOR CATALOG

Amplified by illustrations and detailed descriptions of individual items, a new catalog issued by Ideal Commutator Dresser Company, Sycamore, Ill., lists a wide variety of modern motor-generator maintenance and repair equipment for reconditioning worn machinery and for outfitting new equipment. Among the articles described are: air gap gauges, armature and stator holders, armature slot cleaners, blowers, brush-seaters and related equipment.

RESINS ILLUSTRATED

Technical details on the use of casting resin are included in a booklet now available from Durez Plastics & Chemicals, Inc., North Tonawanda, N. Y. Descriptions are well illustrated and the subject matter is pointed toward aiding manufacturers during the retooling period.

AIR CONDITIONING BOOKLET

Containing blueprints and cost tables, a 24-page booklet entitled "A Practical Plan for Incorporating Central Heating and Air Conditioning in a Proposed Suburban Apartment Housing Development," has been issued by the Ric-Wil Co., Cleveland, Ohio, manufacturers of insulated pipe conduit systems.

COMPACT ENGINEERING DATA

Consisting of four cards enclosed in a durable pocket envelope, a compilation of data pertaining to screw weights and decimal equivalents of twist drills is offered without charge by Manufacturers Screw Products, 222 W. Hubbard St., Chicago 10, Ill., upon receipt of request on letter head stating position held.

MECHANICAL HANDLING EXPLAINED

A booklet, "Clark Carloader Method," issued by Clark Trutractor Division of Clark Equipment Co., Battle Creek, Mich., explains the savings in costs in mechanical materials handling in five different categories falling within the provinces of management executives, purchasing agents, production managers, sales managers and railroad men. A final category draws attention, in an interesting manner, to the advantages gained by all industry through mechanical handling methods.

NAILABLE FRAMING OUTLINED

An illustrated 24-page catalog of "Stran-Steel" nailable framing for light occupancy structure, along with other Stran-Steel literature is available on request to Great Lakes Steel Corp., Stran-Steel Division, 3750 Penobscot Bldg., Detroit 26, Mich.

(more on page 70)

"Worthless" Green Sea Grass Found Valuable

Hypnea musciformis, known as "green grass" to fishermen of the North Carolina coast, has been found a prolific source of gel, as a consequence of research by Dr. Harold Humm, of the Duke University's Marine Laboratory here. For some time "mossers" have been harvesting Gracilaria, or "red grass," for processing at a plant at Beaufort, which has been able to extract from 10 to 20 per cent gel from the dry grass, netting from $600 to $1,200 per ton.

Missouri Ordnance Plant Shifted to Research

The Bureau of Mines is taking over the Missouri Ordnance Works, wartime synthetic ammonia plant near Louisiana, Mo., and will convert it for demonstration of production of gasoline and oil from coal and lignite. An agreement for transfer of the $17,500,000 plant from the War Department to the Interior Department has just been concluded.

Largest project under the Synthetic Liquid Fuels Act sponsored by Senator Joseph O'Mahoney, of Wyoming, and Representative Jennings Randolph, of West Virginia, the plant will be operated in conjunction with a research and development laboratory at Bruceton, Pa. It will serve as a proving ground for hydrogenation and gas synthesis processes developed at the laboratory.

In addition to the Louisiana, Mo., and Bruceton, Pa., plants, an oil shale demonstration plant is under construction near Rifle, Colo., and an oil shale research and development laboratory at Laramie, Wyo.

Usable equipment at the Missouri plant is listed as the power plant, water supply system, office and laboratory buildings, machine shops, parking lots and roads, sewers, railroad sidings and coal unloading equipment. Gas reforming units, purification equipment, shift converters and compressors now in the plant may also be of assistance in the preliminary work. Additional structures and equipment designed specifically for synthetic fuel production will be installed.

Below — Missouri Ordnance Works, which the Bureau of Mines is taking over for demonstration purposes in connection with its gasoline and oil research work. The plant is located near Louisiana, Mo., and cost $17,500,000.

Rubber Company Buys Rayon Cord Plant

(*Continued from page* 65)

creases to seven the number of textile mills owned by the rubber company.

The Scottsville building is of advanced design throughout. Windowless except for the office, the plant is illuminated by fluorescent lights. Temperature and humidity control are maintained by a change of air every four to six minutes. In the building proper are located supply rooms, machine shop, rest rooms, kitchen, cafeteria and a textile laboratory for testing and research.

Machinery is set up for straight line production. Rayon filament yarn on 1,000-pound beams is put into twisting machines at one end of the room. It is first plytwisted, then respooled, cable twisted and woven, and it comes out the other end as high-tenacity tire cord fabric.

Lumber Production Down

September's lumber production declined 467,489,000 board feet, a drop of 17.6 per cent from that of August, according to the Civilian Production Administration, successor to WPB. This decline, the CPA said, is the most severe between-months drop that has occured since the war began. The September output was 2,196,045,000 board feet. Production for 1945, to tht end of September, the CPA continued, is 12.9 per cent below the same period of 1944.

The decrease, general throughout the country except for the North Central Region, which showed an increase of two per cent over August, was due, according to CPA, to labor "negotiations" in the West, while unfavorable weather conditions and partial loss of labor to harvesting activities in the South cut production in this region.

Unemployment Held Low

Major reconversion industries showed employment 50 per cent above prewar levels in September, low month for postwar employment, according to a report by the Civilian Production Administration.

Commercial Banks Seek Consumer Credit Business

COMMERCIAL banks are out to gain a greater share of the postwar instalment financing dollar. To this end they have launched a far-reaching plan to participate intensively in consumer credit. The American public buys the majority of all capital goods on time credit. Before the war 69 per cent of all household appliance purchases were on a time basis; 75 per cent of all household furniture was bought on time; 45 per cent of all jewelry store sales and 40 per cent of all automobiles were paid for on time.

The instalment business constitutes a $10 billion dollar market. Of this mass of time payment paper the banks of the nation handled only 24 per cent in 1941, the last year of full civilian production. The balance was carried largely by finance companies. Early in 1944, however, a group of bank representatives met in New York to discuss bank participation in consumer credit. An agreement was perfected for working together to form a nation-wide sales finance organization. Participating in the agreement was the Citizens and Southern National Bank, Atlanta; Republic National Bank of Dallas, Union Planters National Bank & Trust Co., Memphis; State-Planters Bank and Trust Co., Richmond; Mercantile - Commerce Bank & Trust Co., St. Louis; Fifth Third Union Trust Co., Cincinnati; National Shawmut Bank of Boston, Bank of the Manhattan Co., New York; Peoples-Pittsburgh Trust Co., Pittsburgh; The Detroit Bank, Detroit; Pennsylvania Company for Insurances on Lives and Granting Annuities, Philadelphia, and Central National Bank of Cleveland.

Plans laid by this group of banks have culminated in the establishment of The National Sales Finance Plan embracing nearly 1,000 commercial banks in 37 states east of the Rocky Mountains which is now operative in its initial stages, and in the appointment of William B. Hall, former vice president of The Detroit Bank, as co-ordinator of the plan. The member banks are all geared to finance retail instalment purchases of household appliances.

Obstacles that had to be overcome by the banks to become strong factors in sales finance participation were of several kinds. Manufacturers, recognizing the need for retail as well as wholesale credit, were able to make contracts with finance companies providing national coverage. This was necessary to tie in with their sales programs. Distributors and dealers were inclined to accept the financing sponsored by the manufacturers because it was easier than negotiating individual arrangements with their local banks and also because of the floor plan accommodations extended by the finance companies.

Many banks were reluctant to extend such floor plan financing without the protection afforded by manufacturers' contracts. The dealer who obtained floor plan credit was required to offer his retail paper to the finance company. The consumer, on his part, has not been inclined to take the initiative in financing his instalment purchases. The person buying, say, a refrigerator is interested primarily in the refrigerator. Rarely does he first go out of his way to make arrangements with his bank to borrow the money for the purchase. Consequently it is the dealer who directs the financing and the dealer is influenced largely by the program recommended by the manufacturer.

The pioneers of The National Finance Plan believed that practically every dealer would prefer to do business with his own local bank if it were made possible and convenient for him to do so. They believed everybody would rather do business at home. They realized also that the average person is flattered to have bank esteem and credit, and that they would gain good will by making it possible for individuals to do business with their banks. They realized that they needed a plan—a plan that would remove the difficulty which individual banks encountered in trying to compete on equal terms with finance companies. Such a plan could come only from cooperation. The problem became

(*Continued on page* 70)

-:- TRADE -:- LITERATURE

CELLULOSE BOOKLET ISSUED

A revised edition of the technical booklet on cellulose, including a new section on the use of cellulose acetate in thermoplastic laminates, has been issued by Hercules Powder Company, Wilmington, Del.

HYDRAULIC PRESS CATALOG

Specifications of Rodgers portable hydraulic press are outlined in a new catalog recently released by Rodgers Hydraulic, Inc., Minneapolis, Minn. Other equipment described includes shop presses, hooks and lugs for pulling, jacks and other hydraulic equipment.

BORAX BECOMES ADAMANT

A folder giving physical facts about "Norbide," described as the "hardest material made by man," has been issued by Norton Co., Worcester 6, Mass. The folder explains how borax from Death Valley becomes boric acid glass and is then mixed with petroleum coke and baked in electric furnaces at approximately 5,000 degrees Fahrenheit. In powdered form the material is used as an abrasive or may be molded under pressure into a variety of hard-metal devices.

TECHNICAL RESEARCH EXPLAINED

A pamphlet entitled "Organization of Technical Research in Industry" has been released for distribution outside of membership by Industrial Research Institute, Inc., 60 East 42nd St., New York 17, N. Y. Copies may be obtained without charge from that office. The phamphlet describes the purpose of research organizations in furnishing technical information and developing new products, together with outlines of organization for research staffs.

RESEARCH BOOKLET ISSUED

Hungerford Research Corp., Murray Hill, N. J., has issued a 16-page booklet explaining its services in the development of new and improved products, with specialization in powder metals and plastics as applied to mechanical and electrical equipment. The booklet presents personnel, laboratory and shop facilities.

NEW LINE OF HAMMERS

A new line of plastic hammers, the Artus-Red-Hed, has been announced by Industrial Products Suppliers, 2 Broadway, New York 4, N. Y. These hammers are designed for work on all highly polished surfaces and fine lapped finishes, on delicate parts, aligning work, sheet metal the coil work of electricians, the work of tool makers, aircraft mechanics, and garage mechanics. The manufacturers have published an attractive folder on these hammers.

TITUSVILLE FORGE ISSUES BULLETIN

An interesting new 8-page bulletin has just been published by the Titusville Forge Division of Struthers Wells Corporation describing the company's facilities for precision forgings regardless of size, metal or alloy.

Copies of this new bulletin "Titusville Heavy Steel and Alloy Forgings" may be secured by writing direct to Titusville Forge Division, Struthers Wells Corporation, Titusville, Pa.

CROSBY WIRE ROPE CLIP INSTRUCTION

American Hoist & Derricks Co., has issued a new edition of the Crosby Clip Instruction Booklet CCB-11B.

Besides giving full details about the Crosby Clip, it contains a table of the number of clips to use for all sizes of rope up to three inches. Also, instructions illustrated with diagram and pictures are given for properly making a wire rope fastening.

PLANNING FOR BETTER LIVING

"Solar Houses" is the title of a 24-page booklet issued by Libbey-Owens-Ford Glass Company, Toledo. It presents attractively in half-tone cuts, suggestions for "an architectural lift in living." It makes rather vivid the floor plans, inside and outside appearances of solar houses. The LOBC announces its inability to supply complete designs or architectural specifications for the houses pictured, but it appears likely one's architect would be able to meet that need.

(*More on page* 82)

Civic leaders from various East Texas communities on November 27 and 28 attended the final lectures of a series designed to promote community and industrial development under sponsorship of the East Texas Chamber of Commerce. The course was conducted by John M. Guild, manager of the organization's industrial and research department, who has directed similar courses in other southern states. The lectures were held in five series in the various districts, each being followed by discussions. Displays of advertising material, surveys and publications were used to illustrate the proper procedure toward promoting industrial development.

Consumer Credit Business Sought

(*Continued from page* 69)

one of banding banks, thousands strong, into an association, national in scope, that could make the same kind of agreements with manufacturers that the finance firms made.

Manufacturers were approached on the subject informally. The response was good. An agreement was worked out for cooperation in securing manufacturers' contracts. Other banks were approached and enlisted in the organization. The agreement they signed has been called the "Coordinating Agreement." It provides for a coordinator to represent the whole group of banks in presenting the plan to manufacturers. The expense of the coordinator's office is to be borne by all participating banks in proportion to the amount of business which each bank does under the plan. Spread among a potential two thousand banks, the cost will be negligible.

The contract prepared for manufacturers to sign was designed to put participants in the plan on an equal footing with national finance companies insofar as manufacturers' sponsorship with their distributors and dealers is concerned. Protection for the banks covering the floorstocks of the dealers is provided in the contract but manufacturers are not required to guarantee any part of the retail paper. In most instances a basic interest rate of six per cent will apply on instalment contracts.

Back of the plan was the conviction that what will help banks individually will help all banking; that large banks should make available to their correspondent banks everything it learns about consumer credit; that large banks have opportunities for investigation that are not readily available to smaller banks; that together a group of banks can do more than each bank can do individually; and that manufacturers' contracts should help banks obtain more business.

Directing the operation of the plan, Mr. Hall, its coordinator, has a background of instalment financing experience. He established the consumer credit department of The Detroit Bank and had immediate charge of its operation in the bank's thirty branches. Before that he directed an industrial bank and a finance company. One of his first tasks will be to initiate arrangements with household appliance manufacturers throughout the country for almost nation-wide bank financing of their merchandise.

We, too, have our hands full this time of year.

For us, December 24 and 25 are always busy days at Long Distance switchboards—and they will be busier than ever this Christmas. There will be unavoidably long delays on Long Distance and some calls may not get through at all.

You will get quicker service a few days before or after the holidays.

BELL TELEPHONE SYSTEM

Plant Layout as a Factor in Reducing Production Costs

(*Continued from page* 61)

consideration.

In most bulk process industries careful consideration must be given to the layout of piping and flow lines in a manner which will insure efficient use of process steam and the economical disposal of waste. On the other hand, in food and packaging plants, handling and shipping problems are often a controlling factor.

In mass production industries, layout becomes essentially a design for the effective coordination of production machinery, handling devices and manpower in whatever way promises to be the most economical for transformation of raw materials or assembly of parts into finished products.

Quite apart from the production aspects of layout, provisions must be made to handle employee traffic to and from job locations and between these locations and wash rooms, canteens and cafeterias with a minimum expenditure of time. In the solution of this problem, the facilities which are essential for employee convenience can frequently be located above the floor on special mezzanines provided for the purpose, or around the outer edges of the plant where they are clear of production lines. In very large layouts, where the expanse of floor space and required clearance preclude the use of such locations, the facilities frequently can be best placed in basement areas alongside traffic corridors which give access to various sections of the plant. In this way employees are able to reach their individual departments without walking through other parts of the plant.

In many industries, the solution of complex layout problems has been greatly simplified by eliminating all daylight and natural ventilation from working areas, so that light and atmospheric conditions are under complete control at all times. While such plants are entirely dependent upon artificial illumination and air-conditioning, the low heat output of fluorescent lighting units, the high operating efficiency of modern ventilating and air-conditioning equipment, and the availability of new building materials with high insulating, light reflecting and acoustical properties, makes them practical and economical. In the first place window washing and other maintenance problems are completely eliminated, and less heating is required than in modern daylight factories, with their large areas of sash.

The most obvious advantages of controlled conditions are those which can be measured directly in terms of improved product quality and reduction of scrap and seconds at precision metal-working and instrument plants, textile mills and color printing establishments. There variations in light, temperature and humidity make it impossible to maintain required standards. Other industries, however, have adopted the controlled-conditions idea solely for its effect upon their layouts.

Problems encountered in planning for coordinated straight-line production of all types of saws, machine knives, files and other precision cutting tools were largely responsible for the original evolution of the con-

(*Continued on page* 76)

Southern Expansions in November

(*Continued from page* 63)

Nederland, Port Neches and surrounding communities for erection of 500-locker plant; cost $35,000.

NEW BRAUNFELS — Building — New Braunfels Herald let contract for new building.

NEW BRAUNFELS—Weave Room—New Braunfels Textile Mill has let contract for construction of new weave room; cost between $92,000 and $100,000.

SAN ANTONIO — Garage — San Antonio Transit Co., plan new $1,000,000 bus garage and maintenance shops.

SAN ANTONIO—Shop & Warehouse—General Supply Co. has let contract for erection of steel shop and warehouse.

SAN ANTONIO—Warehouse—Southwestern Specialty Co., let contract at $96,816 for warehouse.

WICHITA FALLS—Boot Factory—T. B. Wilkes, let contract for brick building for boot factory.

VIRGINIA

Plant—Grasselli department of E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., has option on site in Chesterfield County, near Richmond for erection of small sulphuric acid plant.

BRIDGEWATER — Plant — Celanese Corp. of America, plan warp knit plant at cost of $500,000.

DANVILLE—Mills—The Riverside and Dan River Cotton Mills Co., Inc., started work on doubling size of Schoolfield filtration plant at cost of $250,000.

DANVILLE—Power Plant—Riverside & Dan River Cotton Mills, Inc., has let contract for construction of steam power plant; approximate cost $900,000.

GLASGOW—Mill — Lees-Cochrane building woolen spinning mill.

JARRATT — Expansion — Johns-Manville Corp., New York City plans $1,000,000 expansion program in Jarratt.

LYNCHBURG—Plant—N & W Overall Co. has under construction a $60,000 addition to plant.

MARTINSVILLE — Building — Mike R. Schottland let contract for building; cost $50,000.

NORFOLK—Addition—Norfolk Coca-Cola Bottling Co., let contract for superstructure of garage and warehouse, at $275,000.

NORFOLK — Building — Fruehauf Trailer Co., Detroit, Mich., let contract for service branch.

NORFOLK—Engines—Seaboard Air Line Railway placed an order for four 2,000-horsepower Diesel electric locomotives; approximate cost $700,000.

ROANOKE—Plant—Southern States Marketing Cooperative, will erect poultry dressing plant.

WEST VIRGINIA

PARKERSBURG — Plant — American Cyanamid Co., New York City, has acquired a site of 800 acres sixteen miles above Parkersburg and on Ohio River, for erection of Calco plant.

PARKERSBURG—Plant—E. I. du Pont de Nemours & Co., Wilmington, Del., has purchased a site of 400 acres with a frontage of two miles on the Ohio River and six miles below Parkersburg, for erection of first unit of a nylon plastics plant, estimated cost approximately $10,000,000.

PARKERSBURG—Plant—B. F. Goodrich Co., Akron, Ohio, has site of approximately 70-acres on the Muskingum River, for erection of plant.

WHEELING — Plant — Wheeling Machine Products Co. has let contract for erection of modern new plant at Elm Grove near here.

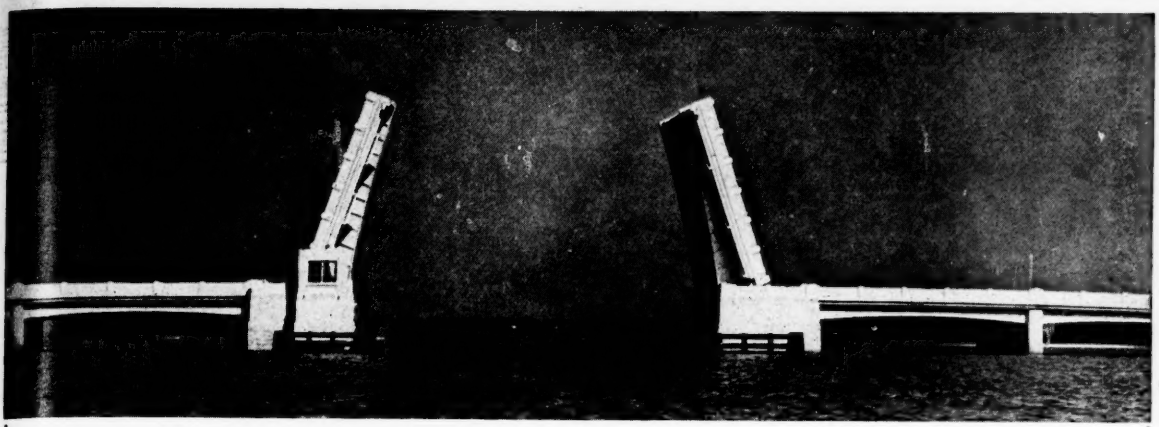
Texan Directs Surplus Disposal in South America

Philip C. Kidd, Houston, Texas, former Lend-Lease adviser, has been appointed FLC Field Commissioner for Latin America to direct the disposal of overseas war surplus and residue, it has been announced by Foreign Liquidation Commissioner Thomas B. McCabe.

Offices have been opened at Panama and Rio de Janeiro, Brazil. Preliminary arrangements were made by a FLC group headed by Col. Clarence D. Barker.

Mr. Kidd, formerly with the Washington staff for consultations, has departed to take up his new duties. He is a graduate of the University of Oklahoma Law School, from which he received an LL.B. in 1928. Subsequently he was practicing attorney in Texas and in New York City where he was banking counsel for Irving Trust Co. He travelled extensively through South America, Europe and Asia. In May, 1941, he became counsel for the Metals Division of OPA and in December for Lend-Lease.

He was Lend-Lease negotiator with the Netherlands, and headed missions to Iran and Iraq.



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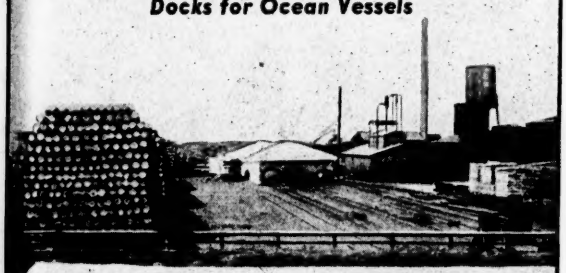

American Creosote Works, Inc.

New Orleans, La.

Atlantic Creosoting Co., Inc.

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South's Construction Remains Steady

(*Continued from page 59*)

state Corp., $600,000;

Packing plant, Longview Texas, J. D. Shaw, $500,000;

Factory, Atlanta, Ga., Huttig Sash & Door Co., $500,000;

Hosiery plant, Charlotte, N. C., Belvedere Hosiery Co., $500,000;

Warp knit plant, Bridgewater, Va., Celanese Corp. of America, $500,000;

Stove plant, Murray, Ky., Tappan Stove Co., $500,000;

Building, Dallas, Texas, Alexander Motor Co., $500,000;

Recycling plant, Natchez, Miss., California Oil Co., $500,000;

Recycling plant, Ferriday, La., California Oil Co., $500,000;

Expansion, Bendix Aviation Corp., Towson, Md., $500,000;

Packing plant, Longview, Texas, J. D. Shaw, $500,000;

Plant, Mobile, Ala., Ruberoid Co., $500,000;

Publishing plant improvements, Atlanta, Ga., Constitution Publishing Co., $500,000;

Plant, Memphis, Tenn., Modern Packages, Inc., $500,000;

Plant, Shelby, N. C., Smith-Douglass Co., $500,000;

Warehouse and office, Houston, Texas, McKesson & Robbins, Inc., $400,000;

Tobacco plant, Rocky Mount, N. C., Liggett & Myers Tobacco Co., $300,000;

Garage and warehouse, Norfolk, Va., Coca Cola Bottling Co., $275,000;

Factory, Kernersville, N. C., Southern Silk Mills, Inc., $250,000;

Warehouse and garage, North Kansas City, Mo., Kraft Foods Co., $250,000;

Citrus plant, Auburndale, Fla., William P. MacDonald Corp., $250,000;

Filling stations, Standard Oil Co. of Indiana, St. Louis, Mo., $250,000;

Bottle manufacturing plant, Baltimore, Maryland Glass Corp., $230,000;

Sales and service building, Dallas, Texas, Johnson Brothers Chevrolet Co., $215,000;

Shop building, Houston, Texas, Southwestern Greyhounds Lines, $200,000;

Bus terminal, Dallas, Texas, Southwestern Greyhound Lines, $200,000;

Warehouse, St. Louis, Mo., Caine Steel Co., $200,000;

Warehouse, Houston, Texas, Continental Can Co., $200,000;

Locomotive shop, Macon, Ga., Central of Georgia Railway, $190,000;

Warehouse, Houston, Texas, Peaslee-Gaulbert Corp., $185,950;

Bulk plant and warehouse, Memphis, Tenn., Mid-South Oil Co., $175,000;

Dairy, Greenville, S. C., Pet Dairy Products Co., $150,000;

Manufacturing plant, North Wilkesboro, N. C., Carolina Mirror Co., $150,000;

Furniture factory, Mocksville, N. C., T. Henry Wilson, $140,000;

Bus terminal, Amarillo, Texas, Southwestern Greyhound Lines, $125,000;

Shop building, Houston, Texas, Armco Drainage & Metal Products Co., $124,000;

Elevator and feed plant, Nashville, Tenn., R. L. Wyles & Co., $110,000;

Bus terminal, Bluefield, W. Va., Atlantic Greyhound Corp., $100,000;

Plant, Kansas City, Mo., Clipper Manufacturing Co., $100,000;

Plant, Kings Mountain, N. C., Boshamer, Inc., $100,000;

Plant addition, Columbus, Ga., Muscogee Manufacturing Co., $100,000;

Addition, Glen Raven, N. C., Glen Raven Cotton Mill, $100,000;

Weave room, New Braunfels, Texas, New Braunfels Textile Mill, $100,000;

Hosiery mill, Wilmington, N. C., Industrial Properties, Inc., $100,000;

Plants, Charlotte, N. C., John J. Binder, Dixie Bag Co., $100,000 each;

Mill addition, Burlington, N. C., Long Finishing Mill, $100,000;

Automobile building, Corpus Christi, Texas, Roy Murray Motors, $100,000;

Aircraft and geophysic parts plant, Garland, Texas, Engineering Laboratories, Inc., $100,000;

Water system, Mulberry, Fla., International Mineral & Chemical Corp., $100,000;

Factory building, Marshall, Texas, Marshall Industries, Inc., $100,000;

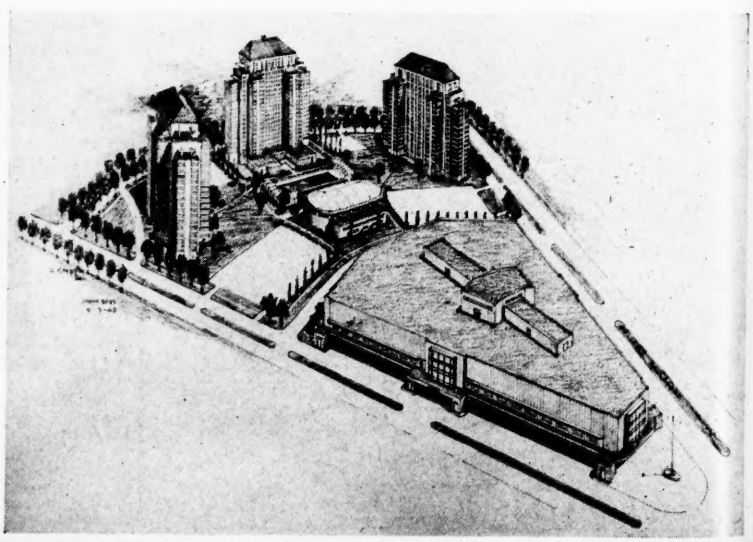
Mill, Charlotte, N. C., Carolina Process Co., $100,000;

Glove manufacturing plant, Oxford,

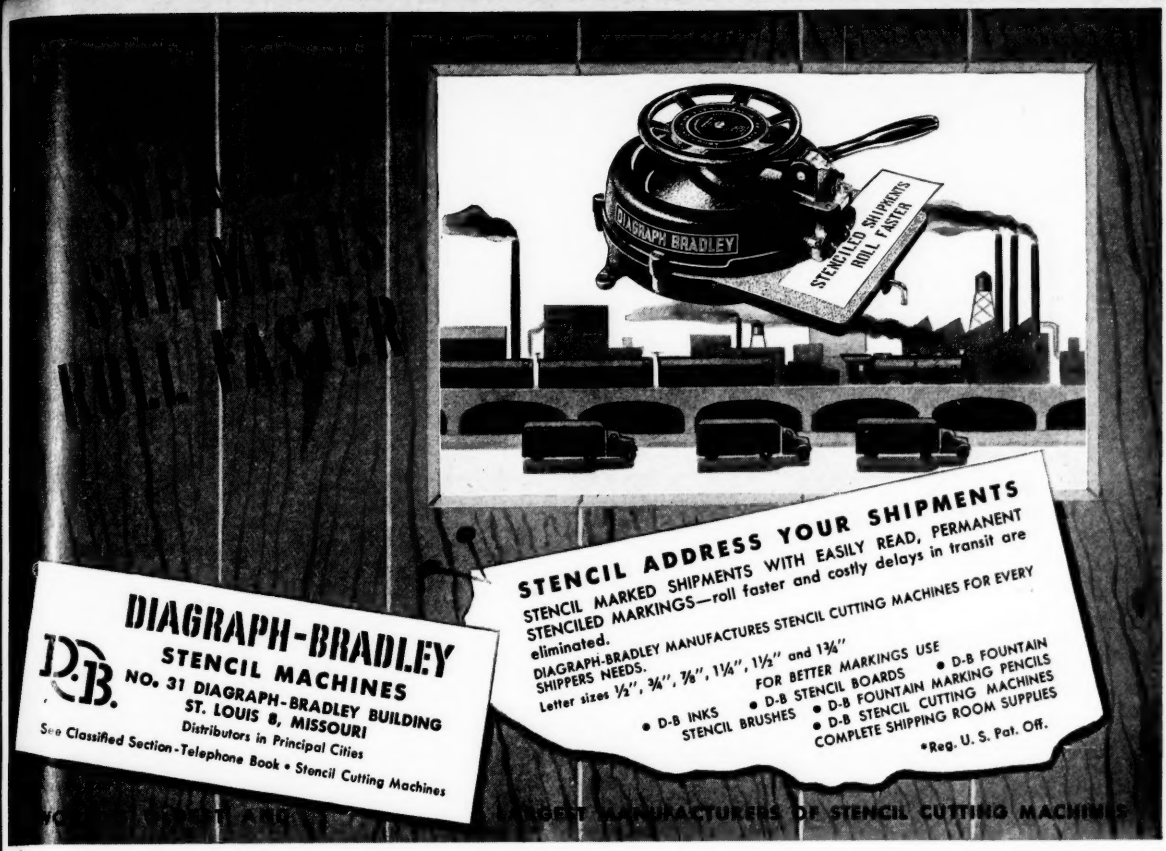
(*Continued on page 78*)

SOUTH'S CONSTRUCTION BY TYPES

	November, 1945 Contracts Awarded	November, 1945 Contracts to be Awarded	Contracts Awarded First Eleven Months 1945	Contracts Awarded First Eleven Months 1944
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$4,322,000	$14,724,000	$15,951,000	$5,626,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	12,906,000	9,037,000	26,667,000	5,556,000
Residential (Apartments, Hotels Dwellings)	9,722,000	5,572,000	42,044,000	47,224,000
Office	5,291,000	5,010,000	8,834,000	566,000
	$32,241,000	$34,343,000	$93,496,000	$58,972,000
INDUSTRIAL	$48,155,000	$77,266,000	$440,547,000	$176,840,000
PUBLIC BUILDING				
City, County, State, Federal and Hospitals	$10,114,000	$56,147,000	$174,261,000	$205,583,000
Housing			18,623,000	47,159,000
Schools	5,298,000	33,318,000	29,308,000	18,765,000
	$15,412,000	$89,465,000	$222,192,000	$271,507,000
ENGINEERING				
Dams, Drainage, Earthwork, and Airports	$5,681,000	$27,409,000	$106,604,000	$165,505,000
Federal, County, Municipal Electric	4,300,000	17,483,000	23,704,000	1,513,000
Sewers and Waterworks	3,401,000	71,914,000	39,346,000	29,740,000
	$13,382,000	$116,806,000	$169,654,000	$196,758,000
ROADS, STREETS AND BRIDGES	$8,918,000	$37,797,000	$100,216,000	$82,407,000
TOTAL	$118,108,000	$355,677,000	$1,026,105,000	$786,484,000



Right—$16,000,000 community center planned at Houston, Texas, by Glenn H. McCarthy. Hedrick & Lindsley are architects and engineers for the project.



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The output of our plants will continue to be devoted to these essential requirements until Victory itself is "in the bag."

FULTON BAG & COTTON MILLS
Manufacturers since 1870
Atlanta St. Louis Dallas
Minneapolis New York New Orleans Kansas City, Kan

Plant Layout

(*Continued from page 72*)

trolled conditions idea which was first applied at the Simonds Saw and Steel Company plant at Fitchburg, Mass. Although scores of other controlled-conditions plants have since been built for many industries from coast to coast, the Simonds plant illustrates the opportunities for the integration of diverse activities in orderly layouts in such buildings. There, by special ventilating and dust removal systems, controlled lighting, isolation of drop hammer and other equipment foundations, and the use of acoustical materials throughout the interior, we were able to bring all of Simonds metal-working activities together in eight self-contained, parallel production lines. With raw stock at one end and finished stock bins adjoining the shipping department at the other, each line incorporates all of the equipment required for the manufacture of the related items in each major product group. In this way, each unit of production moves step by step along the line without any necessity for detours to special processing departments.

The heat produced by 70-odd oil, gas and electric heat treating furnaces is trapped in curtained areas overhead and forced out through roof ventilators which exhaust used air from the plant-wide air-conditioning system, while furnace gases are carried off through three exhaust tunnels under the floor.

By carefully examining the requirements for every portion of each line with respect to floor space needed for the successive operations, the special ventilation and other services required, we ultimately arrived at a layout in which the parallel lines — despite their variable widths—meshed perfectly. Special process piping and service lines, as well as duct work, were held to a minimum. Where the noisier operations occurred, special sound insulation was installed to prevent the building of annoying intensities, and still permit the location of every piece of production equipment "in line" just where it belonged.

Over and above the economies reflected in production itself, Simonds eliminated all departmental supervision and customary production controls. Instead, they placed a foreman in charge of each line and gave him full authority for the scheduling of production required to maintain the finished product inventory of each item within given limits. With all raw stock and material in process open to the foreman's view as he supervises production on his line, there is no need for process inventories, and each foreman merely requisitions raw stock from the company's steel plant whenever his supplies are getting low.

It would be pointless to pretend that all of these advantages and savings resulted from the windowless design, but they did stem directly from a layout which could not have been developed without controlled conditions. That doesn't mean that controlled conditions are indispensable in every industry, but it does illustrate the extent to which they can be helpful in integrating the complex and conflicting aspects of work encountered in many production jobs. The scores of engine, radio and precision instrument plants where these principles were applied

(*Continued on page 78*)

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Short term loans for working capital purposes.

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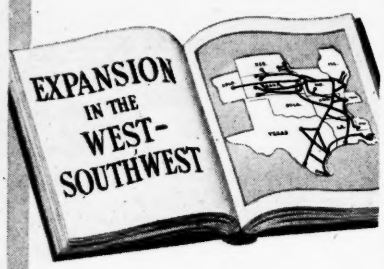
OPEN YOUR BUSINESS HISTORY TO THIS EXCITING NEW CHAPTER



You'll find that the facts about this rich territory, with regard to your particular industry, make highly interesting reading. For here is the fastest-growing industrial section of the United States—the West and Southwest.

There's a quick, easy way to find out all you want to know about this territory—raw materials, accessibility to markets, labor supply, electric power, water, natural gas and any other facts and figures.

Simply consult Missouri Pacific's Industrial Development Department. The specialists who staff this Department and its Research Bureau can readily give you all information on opportunities for your business in this area.

Write or wire Industrial Development Department, 1706 Missouri Pacific Building, St. Louis 3, Missouri; or Industrial Development Department, Missouri Pacific Lines, Union Station, Houston, Texas. Your inquiry you may be sure, will be treated in strict confidence.

MISSOURI PACIFIC LINES

NOW MORE THAN EVER
"A SERVICE INSTITUTION"

Plant Layout

(Continued from page 76)

to meet the all-out demands of war production offer all the proof that one can ask on this point.

What is more, the differential between the cost of such facilities and of conventional plants has been as low as eight cents per employee per day, including fixed charges as well as operating expenses. The production economies and improved morale in such plants have usually been more than enough to offset any such difference in cost.

In the scores of industries which have neither special process problems nor the kind of precision standards which require these all-out controls, modern design offers many other advantages which increase the immediate usefulness and longterm adaptability of industrial space.

The newer daylight cross sections, many of which incorporate welded rigid frame roof members, provide exceptional clearances and unparalleled distribution of daylight. Redesign of welded trusses used in monitor-type and flat-roofed structures has made it possible to disregard the traditional limitations which heretofore compelled us to locate all suspended loads at the panel points. Now you can hang monorails, hoists or any other loads from the trusses at any point along their length. This contributes immeasurably to the flexibility of layout in any plant where such trusses are used.

These advances on the structural side have their counterpart in every aspect of industrial plant design. Taken all together, they give engineers the tools they need to develop layouts which will insure maximum efficiency of operations in any industry, if its executives will but state their needs.

Southern Construction

(Continued from page 74)

Miss., $100,000;

Plant, Wilmington, N. C., Port City Hosiery Mill, $100,000;

Filtration plant, Danville, Va., Riverside and Dan River Cotton Mills;

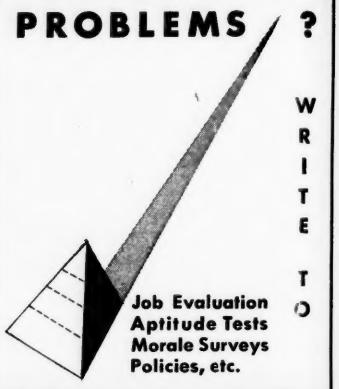
Lumber treating plants, Baltimore, Md., and Florence, S. C., American Lumber & Treating Co.

Chemical plant, Parkersburg, W. Va., American Cyanamid Co.;

Plant, Parkersburg, W. Va., B. F. Goodrich Co.;

Assembly plant, Atlanta, Ga., General Motors Corp.

PERSONNEL PROBLEMS ?



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Masonite Expands

(*Continued from page 49*)

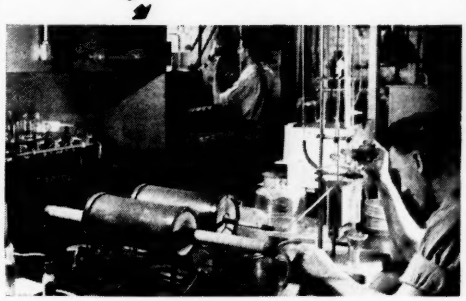
timberlands. Masonite itself owns timberland reserves of 162,095 acres in the state.

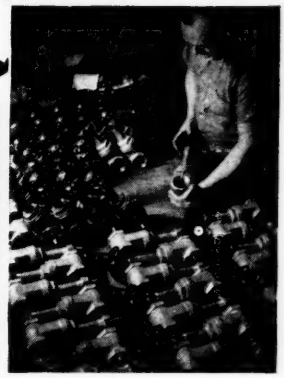
To avoid depletion of Mississippi forest resources, the company in 1936 began a program of tree-planting and education in the growth, protection and harvesting of trees, a valuable annual crop to many farmers. Carrying on its program in cooperation with the State Agriculture Extension Service, Division of Vocational Agriculture of the State Department of Education, the State Forestry Commission and other interested agencies, the company annually distributes free of charge more than 1,500,000 seedlings to farmers, 4-H and FFA Club Boys, and provides instruction for proper planting and care. Those who plant the seedlings are free to dispose of any trees harvested as they wish. Masonite was one of the first wood products companies in the country to inaugurate such a forest development program.

With the coming of peace again, the Masonite plant at Laurel has no reconversion problem in manufacturing operations as do so many industries which were also engaged almost entirely in war production. The products which the company manufactured for war uses are, with few exceptions, identical with those made for peacetime consumption, and the management has reported that it appears that the demand from all major channels of consumption of Masonite products will be large.

Masonite pressed wood products have a wide variety of uses. They are employed by industry in the manufacture of automobile, trailer and railroad car parts and fixtures, refrigerators, furniture, store fixtures, desk tops, telephone booths, signs, display booths, toys, and many other industrial products, as well as by the building and decorating trades in the construction and remodeling of homes, commercial structures, prefabricated homes and farm buildings. Masonite die stock, first employed in aircraft production, is used in assembly jigs, router dies, templates, chucks and form blocks, and in the electrical industry.

From selection of Raw Materials ...to Final Assembly





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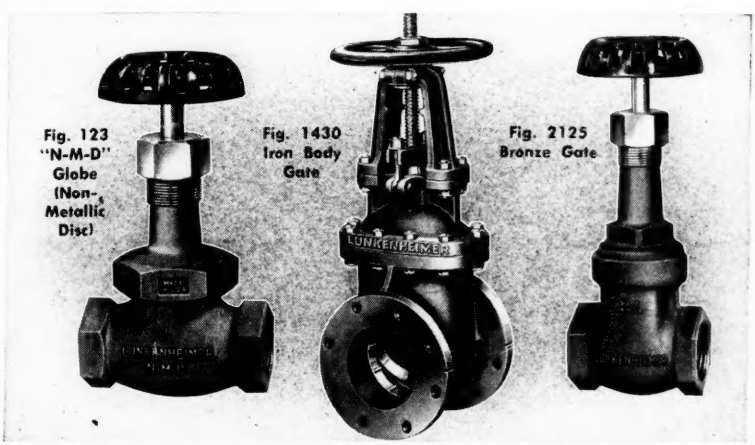

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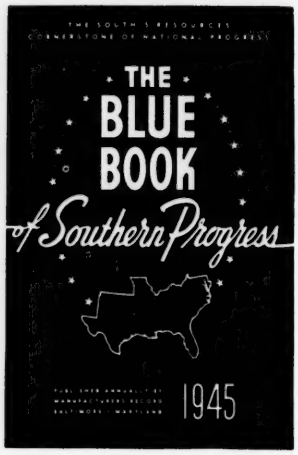

New facts and figures not hitherto available

Value of manufactured products in the South advanced from $11,200,000,000 in 1939 to $23,300,000,000 in 1944, an increase of over 100% in 5 years. There are nearly 40,000 manufacturing plants in the South with payrolls totaling over $3,000,000,000. Annual expenditures for fuel, raw materials and power total $12,600,000,000.

Eighty-two per cent of the rayon and nylon manufacturing capacity is in the South, greatest source of raw materials for the fabric that has made the United States independent of Japan and China for silk and other expensive fabrics.

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Baltimore Firm 90 Years Old

A. K. Robins & Co., Inc., Baltimore manufacturer of canning machinery and equipment, is now in its 90th year of operation. On July 4, 1855, Samuel Sindall opened a tinker's shop, forerunner of the business now headed by his grandson, Robert A. Sindall. In 1870, Samuel M. Sindall joined his father and later with Albert K. Robins took over a shop specializing in grates, stoves and similar commodities. "Bob" Sindall joined the firm in 1899 and under his direction the efforts of the company were devoted exclusively to the manufacture of canning appliances. In 1921, he took over the business to pilot it into its ninth decade of continuous operation. Expressing firm faith in American free enterprise, Mr. Sindall says he likes to believe that A. K. Robins & Co., has contributed through three generations to this American tradition.

Harrison Rejoins A. T. & T.

The election of Major General William H. Harrison to the post of vice president in charge of operation and engineering has been announced by American Telephone and Telegraph Co. General Harrison held this position up to 1940 when he went on leave of absence to head the production division of War Production Board, after which he became a brigadier general in the United States Army and was soon promoted to major general. During his absence the post with A. T. & T. was filled by Mark R. Sullivan who will take over duties as president of four Chesapeake and Potomac telephone companies.

NOTICE

Change of Size

Starting with issue of January, 1946, the untrimmed and trimmed dimensions of both

MANUFACTURERS RECORD

and the

CONSTRUCTION Monthly

will be slightly increased to

Untrimmed ....8⅝" x 11¾"

Trimmed .....8½" x 11½"

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The type page will not be changed but will remain standard 7" x 10".

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MONCKS CORNER, S. C.

Research Laboratory

(*Continued from page 50*)

ogist, after having served a number of years as research associate at Harvard and Columbia universities, and was in charge of the research laboratory at the Houston refinery from 1940 to 1942.

The new director is a native of Brooklyn, N. Y. He received his B.S. degree from the College of the City of New York in 1931, and his M.A. and Ph.D. degrees from Harvard University in 1932 and 1934. Awarded a Parker Traveling Fellowship by Harvard, he spent the following year at Princeton University. Subsequently, he became research associate to Prof. H. C. Urey at Columbia University and to Professors E. Bright Wilson, Jr., and G. B. Kistiakowsky at Harvard.

Author of many papers dealing in reaction kinetics, quantum theory, statistical mechanics, and spectroscopy, Dr. Gershinowitz joined Shell in St. Louis in 1938 as research technologist. Two years later he was placed in charge of the Houston refinery research laboratory, and in 1941 was made its research director. Transferred to New York in the fall of 1942, he became research director for the company's manufacturing department and was responsible for research activities at both the Houston and Wood River research laboratories.

Dr. Hubbert is an authority on the physics of terrestrial phenomena, and the theory of scale models. He joined Shell in 1943 after a distinguished career as a geologist and geophysicist. Forty years old, he was born in San Saba County, Tex., and received his technical education at the University of Chicago, gaining his B.S., M.S., and Ph.D., in 1926, 1928 and 1937. Dr. Hubbert started his career as a geologist with Amerada Petroleum Corp. in 1928. From 1930 to 1940, he was a lecturer in geology and geophysics at Columbia University. At various times during this period he served as geophysicist for the Illinois Geological Survey and as associate geologist with the U. S. Geological Survey. In 1942 and 1943 he was attached to the Office of Economic Warfare in Washington.

The research program is based primarily on the principle that prob-

(*Continued on page 82*)

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Research Laboratory

(*Continued from page* 81)

lems in exploration and production are fundamentally related, and that research in each field cannot be conducted independently of the other. The new laboratory proposes to carry on an integrated research program exploring each problem by the use of physics, chemistry, geology and related engineering sciences. Under the director of research and his associates, liaison with Shell's operating departments will be maintained, as well as the correlation of research in the physical, chemical and geological departments.

It is believed that this flexible organizational structure will eliminate traditional barriers between these basic sciences and insure that research into petroleum exploration and production be conducted with cooperation and efficiency. While the ultimate objective of the new laboratory's research program will be to develop new or improved methods of finding oil and of getting it out of the ground after its discovery, it is recognized that a considerable amount of long-range or "fundamental" research must also be carried on in each of the basic sciences to improve the "tools' with which the new laboratory will work.

In addition to its research activities, the new division of exploration and production research will function as an instruction center for training personnel in new techniques and methods developed by the laboratory. Exploration and production men will be thoroughly acquainted with new developments and will carry them into practical application in the field.

-:- TRADE -:- LITERATURE

LIGHTING DATA PRESENTED

Engineered lighting and control equipment is treated in an eight-page catalog, No. 945, issued by Hub Electric Co., 2219D W. Grand Ave., Chicago 12, Ill. Photographs, drawing and engineering data are included. The equipment described includes stage lighting, exit and directional signs, indirect lighting, built-in lighting, fluorescent troffers and stage switchboards.

PIPE HANGERS DESCRIBED

Conclusions of prefabricated power piping engineers regarding the design of piping layouts for flexibility have been published in a booklet entitled "Blaw-Knox Functional Spring Hangers and Vibration Eliminators," which may be obtained from Blaw-Knox Company, Pittsburgh, Pa., upon application. The booklet gives details concerning types and sizes of functional spring hangers and vibration eliminators with instructions for installation, together with other related engineering data.

DIESEL LOCOMOTIVE BOOKLET

Diesel Engine Manufacturers Association, 1 N. LaSalle St., Chicago 2, Ill., is offering a new booklet, "Diesel Locomotives," that will be of especial interest to factories, steel mills, mines and other types of private enterprise needing continuous in-plant switching service. Profusely illustrated, the booklet also carries charts on costs and upkeep.

ACCOUNTING DEVICE CATALOG

An eight-page catalog issued by Production Instrument Company, 702-14 W. Jackson Blvd., Chicago 6, Illinois, lists stroke and revolution counters with application information, grouped for selection and comparison and will be mailed on request.

FOAMGLAS DESCRIBED

Properties of one of the glass industry's wartime research products, "Foamglas," a cellular glass insulating material, are summarized in a booklet issued by Pittsburgh Corning Corp., 632 Duquesne Way, Pittsburgh 22, Pa. The booklet treats of the physical qualities of foamglas relative to its use in petroleum and allied industries. The 24-page illustrated booklet is available by writing the company.

BOOKLET ON RUBBER

A new 12-page booklet on rubber and synthetic products suggesting applications for industrial designers has been published by The B. F. Goodrich Co., Akron, Ohio. Copies are now available on request to the company. Sections are devoted to Koroseal, a synthetic flexible material, vibro-insulators, rubber lined equipment and other products of interest to developers of industrial equipment.

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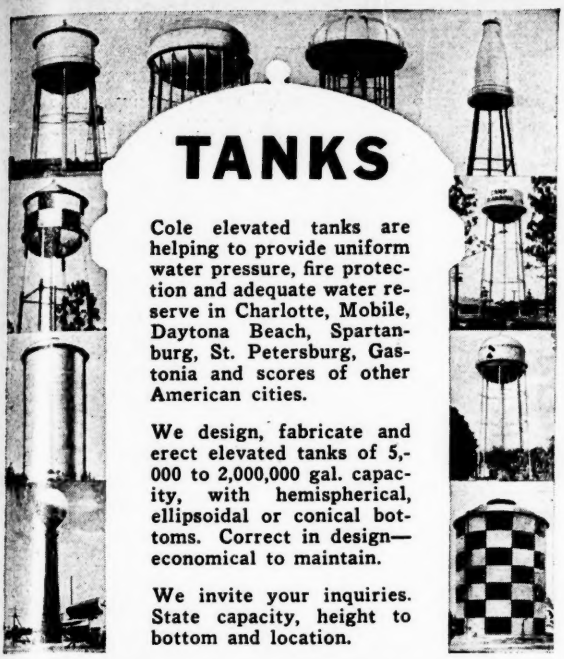

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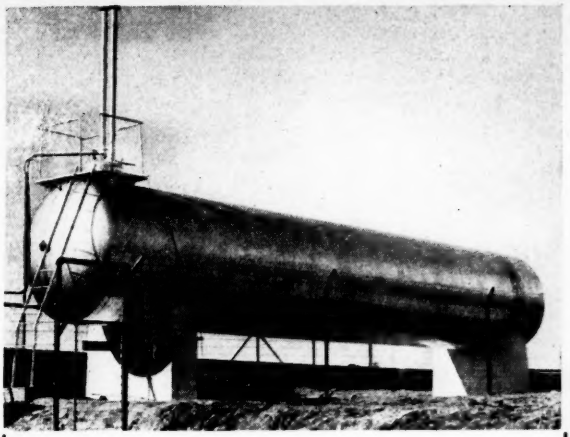

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Leaders See Upswing

(*Continued from page* 53)

South must move forward as a solid front. The banks of the larger cities are attempting to make their contribution not only to metropolitan centers but to the entire region by participating, when asked, with smaller city banks, when asked, on loans in which the latter feel they are unable to provide the full amount sought."

Mr. Gellerstedt declared that the South's banks are interested not only in adequate financing for industry but in adequate financing for agriculture as well.

L. W. (Chip) Robert, executive of Robert & Company, and a man who has his finger constantly on the building pulse of the nation, foresees a vast building program ahead for the South.

This Atlantian says his company now is working on contracts which call for the expenditure of more than $20,000,000 in the Southeast alone. He said his company is working on plans for six vast multi-million-dollar textile finishing plants for the Southeast. These plants will be financed, chiefly, he said, by Southern capital.

Wiley L. Moore, one of Georgia's most prominent capitalists, predicts that within half a year this state will be obtaining out-of-state industries as rapidly as Georgia can accommodate them. Locally-financed industries, he said, already are developing rapidly.

Governor Ellis Arnall said that it was the state's job to help businessmen provide any employment needed and added that he was not "greatly concerned about Georgia during the reconversion period." Added the Governor: "I am very optimistic over Georgia's chances for development during the reconversion."

Robert Strickland, Atlanta, president of the Trust Company of Georgia, sees far flung industrial opportunities for the South—provided the South itself buckles down to meeting the challenge with a sincerity and an intentness of purpose. So, too, does Erle Cocke, president of the Fulton National Bank, Atlanta, and regional director, Committee for Economic Development.

It all seems to add up to one conclusion: The South at last is as sold on its potentialities as other regions of the nation were in the years immediately preceding the war. The war has given the South a confidence it lacked before in its own abilities, its own possibilities. Today it has that confidence.

Textile Progress Continues

Revolutionary developments in textile production are far from being at an end according to *American Chemical Society Journal*. New processes envisage cloth from grass, soft nylon threads for wool-like application, vinyon with 100 per cent recovery after stretching and cotton pressed into fabrics without benefit of spinners or looms. Fine-denier viscose rayon is being formed into underwear fabric of silk-like quality. Techniques for combining fibers have been developed along new lines.

Arkansas Power to Expand

A $20 million progam for expanding present industries and to attract new ones to Arkansas has been approved by the board of directors of Arkansas Power and Light Co., sponsors of the project. Said company president C. Hamilton Moses, after the board meeting, "Arkansas will never lose an industry for lack of adequate cheap power." He explained that plans call for powerful new substations, new transmission lines and other extensive improvements designed to benefit the entire state.

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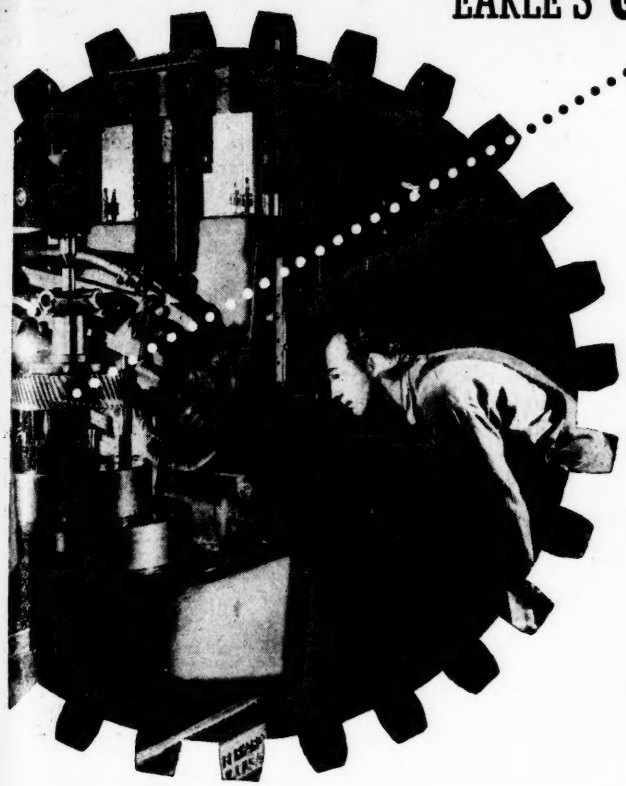

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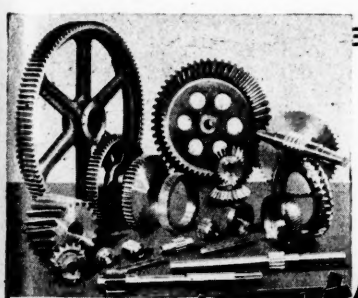

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Labor Unions

(*Continued from page* 51)

Since the advent of the Wagner Act, and particularly, of course, since the war began to swell our payrolls, union organization has grown by leaps and bounds. Union leaders recognize that a great portion of this growth represents unwilling or unenthusiastic "card-carriers" who were forced into the union in spite of the fact that their leaders had substituted political slogans for the accustomed economic ones, since wages and working conditions had become pretty generally frozen. It is still too early to decide whether labor's adventure into pure politics has gained it as many friends among the general public as it has enemies.

Because they necessarily lack that old-fashioned, fighting leadership that comes up the hard way, these modern, synthetically-spawned unions have been forced to devote their swollen treasuries to the hiring of outside brains at ruinous prices. The brains attempt to serve the purpose of dyed-in-the-wool leaders and are usually grafted onto the organization as "staff experts." They come with a superficial, intellectual interest in the labor movement rather than with the zealous, sympathetic devotion contributed in so matter-of-course a fashion by the labor official who has sweated alongside the workers whom he is privileged to lead.

And so, although it certainly was not the intent of its authors, the Wagner Act has brought us more than freedom to organize without molestation by tyrannical employers. Something new has been added to the labor movement in the form of the double-headed monster of *legalism* and *highbrowism*,—the very combination (ironically enough) that has been so traditionally hated and distrusted by the same labor skates who themselves played midwife so eagerly to labor's new day.

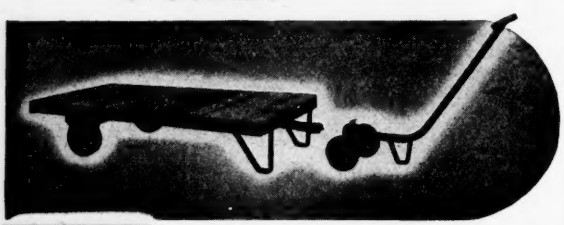
Labor racketeering has increased largely for the same reason that business racketeering has increased—simply because the plums have become larger and sweeter. But labor traitors who once met speedy justice at the hands of their outraged fellow workers nowadays seem to slip through our legalistic nets. Their crimes, moreover, are too liable to be glossed over by the unions' "paid brains" if the latter happen to be the hirelings of the criminals themselves.

To the staff union intellectual, the local is merely a nice, fat guinea pig. Rather than fight to preserve its honor, as your grass-roots labor leader instinctively does, your highbrow will often keep the organization alive only because he sees a chance to torture it with social experiments. One of the current social experiments is the stupid approach to the problems of racism in industry.

FOR RETURNING VETS

"Welcome Back," is the theme of an illustrated booklet issued by York Corp., York, Pa., makers of cooling equipment, and mailed to former employees now in the Armed Services. The booklet gives detailed description of the procedures that will be used to route returning service men and women to the jobs they will fill.

THOMAS TRUCK of Keokuk



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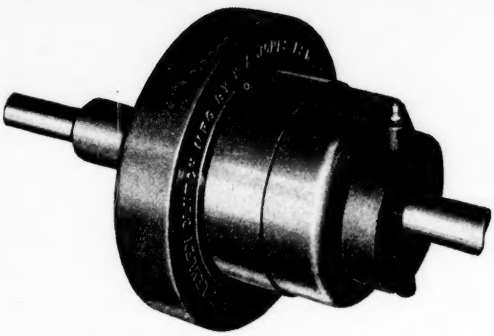
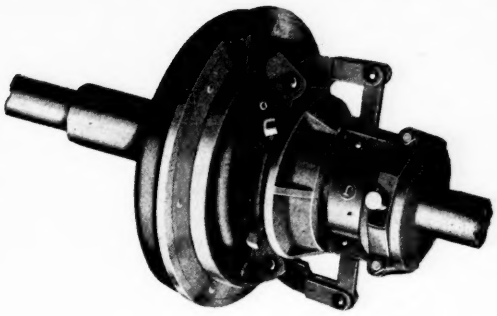
JONES-LEMLEY FRICTION CLUTCHES





JONES-LEMLEY friction clutches are built for a broad range of shaft sizes and ratings in both enclosed and open types for sleeve and coupling work. In addition they are available in a line of Jones-Lemley friction clutch pulleys. This clutch modification is also used for gears, V-belt sheaves, sprocket wheels, etc. Sizes, ratings, dimensions, prices and other data are contained in Bulletin No. 60. Your request will bring a copy.

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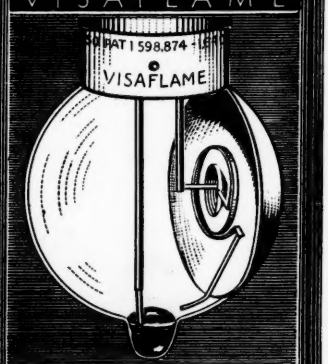

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NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

NEWPORT NEWS, VIRGINIA

Engineering Research

(*Continued from page 57*)

also important fields for study. Weight reduction in railway and truck equipment, improved riding qualities of railway, bus, airplane and automotive equipment, sound reduction in all types of public conveyances are fields for study by these industries as well as the manufacturers who supply their equipment. The manufacture of accessories for these fields also offers extensive possibilities for the small and large industries.

The petroleum industry, one of the South's major industries, is a source of raw materials which is becoming increasingly important in our national economy. Petroleum is no longer only a source of fuel but is becoming a competitor of all manners of raw materials. The fishing industry of the South also needs new and improved equipment and devices to improve the recovery and preservation of its product.

Proximity of the Gulf Coast to South American markets and raw materials gives the South a potential advantage in handling marine cargo for its industries. This lists only a few of the research possibilities for the South. Besides those possibilities which have particular application to the South, there are all those research possibilities which apply to industry in general.

The important thing for industries of the South is not what all might be done but to get something started. Often at the start of a research program there is a question as to what reserach can do on the problem. After a short time the problem becomes not one of what to do but which of many possibilities should be studied first.

Engineering research aims at improving our living standards through new products, better products, cheaper products or more products. Fundamentally when we improve our output we directly improve our standard of living. This can be brought about through the design of machines adapted to a particular job, through the application of labor saving devices, or through process and equipment changes which will result in more efficient operations. Any of these make labor capable of greater output, hence more valuable. The result is higher wages with higher output and lower cost, all of which contribute to a higher standard of living for all.

What research can achieve in the South in the immediate future depends on the support which management and capital gives to research and to products of research. For a stable, long-time development it must also see that facilities and funds are made available to its colleges and universities for training the necessary personnel to carry on research and to supply industry with technically trained personnel which it requires.

Mines Bureau Educational Film

United States Bureau of Mines, Department of the Interior, Washington 25, D. C., announces the release of three new industrial films, 16-mm. with sound track, that are available to manufacturers, schools and others on application to the Bureau.

The films are: "A Story of Arc Welding," in full color; "The Evolution of the Oil Industry," and "A Story of Copper." Each presentation runs approximately 30 minutes and gives in close-up detail various phases of the different activities filmed.

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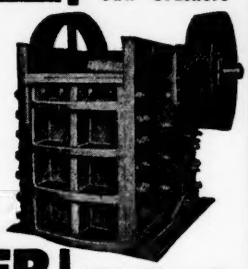

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Ruberoid District Manager

George F. Steinwart, formerly St. Louis district representative, has been named district sales manager at Minneapolis for the Ruberoid Co., succeeding Ray W. Sweeney who has been promoted to sales manager of the company's entire Western Division, with headquarters in Chicago where he succeeds Louis Herscovitz, recently made vice president and general sales manager of the company.

Graniteville Centenary

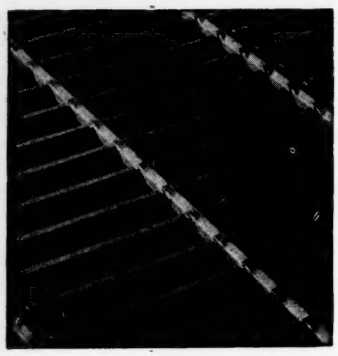
(*Continued from page 45*)

for rebuilding and repairing which have been restricted by the war are now ready to be unleashed.

The personnel department, besides function to employ sufficient numbers of qualified workers, participates in all activities that tend to keep the employees satisfied, cooperative and productive. The medical service of the department conducts physical checkups, compiles accident statistics and recently completed a chest X-ray survey of the majority of the employees in all the company's plants. The personnel department also publishes the Graniteville Bulletin and runs a catering service on all shifts. It conducts vocational classes to develop workers' skills and maintains contact with educational agencies — county, state and federal—in order to use their available programs. In the words of the chief of the department, "We deal with humans and our work and problems are as varied as the individuals whom we serve."

Commenting on the growth of his firm, Samuel H. Swint, president and treasurer of Graniteville Company, calls attention to the fact that the state of South Carolina has had a comparable growth. Figures he submits show that in 1840 South Carolina harvested 123,420 bales of cotton; in 1944, 846,883 bales. In 1840 it used 5,135 bales; in 1944, 2,039,106. Only 15 textile mills were in operation in 1840; by 1944 there were 229. Spindles increased in number from 16,355 to 5,675,000; employees from 570 to 113,716. Value of mill products grew from $359,000 to $771,000,000. Probably the most striking comparison is to be seen in the changed relative positions of agriculture and manufacturing in the state. In 1944 all crops totaled a value of $278,399,000 while the value of all manufactures was $1,093,100,000.

The movement for Southern manufacturing has been southwide. So well has Southern enterprise followed the lines laid down by Gregg and Graniteville that over 75 per cent of the cotton spindles in the country are in the South. The two Carolinas and Georgia have 61 per cent and South Carolina alone has about 23 per cent. Along with this material growth has gone a corresponding development of churches, schools and other civic refinements. To the great textile industry of which Graniteville is a part must be attributed much of the gain in material resources which has made this progress possible.



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WARTIME SHIP PROGRAMS FINISHED

Delivery of the Victory cargo ships, S. S. Brainerd Victory and the T-2 type tanker, S. S. J. H. MacGaregill, during November brought to a close two large war-time shipbuilding programs, it is announced by the U. S. Maritime Commission. The cargo ship and the tanker were included in the 42 merchant vessels aggregating 333,667 deadweight tons delivered by merchant shipyards during November.

The emergency program for Liberty type ships was concluded during the month of October, with the delivery of the 2710th vessel, the S. S. Albert M. Boe by the New England Shipbuilding Corp. on October 30, 1945. The first ship in this program, S. S. Patrick Henry, was launched from the yard of the Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md., September 27, 1941.

From the S. S. United Victory, pioneer of the merchant vessels of the Victory type, delivered February 29, 1944 by the Portland yard of the Oregon Shipbuilding Corp., until the last of the type, the Brainerd Victory, delivered by the same yard November 23, 1945, merchant shipyards have turned out 531 Victory ships. Bethlehem-Fairfield Shipyard, Inc., delivered 94; California Shipbuilding Corp., Wilmington, Calif., built 131; Kaiser Company, Inc., Vancouver, Wash., 31; Oregon Shipbuilding Corp., 133; while Permanente Metals Corp., Richmond, California, produced 53 in yard number one and 89 in yard number two.

The first T2-SE-A1 type tanker was the Esso Gettysburg delivered by the Sun Shipbuilding and Dry Dock Co., Chester, Pa., February 28, 1942. From the first T-2 tanker until the delivery of the MacGaregill from the same yard on November 30, 1945, there have been 525 tankers of the T2-SE-A1 type or modifications built under the U. S. Maritime Commission program. The Sun yard turned out 198 of the tankers, Alabama Dry Dock & Shipbuilding Co., Mobile, Ala., delivered 102; Kaiser Company, Inc., Swan Island Yard, Portland, Ore., built 147; and Marinship Corp., Sausalito, Calif., delivered 78.

From January 1, 1942 through November 1945 there have been 5,573 ships of 54,002,123 deadweight tons delivered under the U. S. Maritime Commission Program.

Delta Passenger Traffic Mounts—40 Hour Work Week is Announced

Passenger traffic over Delta Air Lines during November increased 50 per cent above the same month last year, according to Col. Leigh C. Palmer, vice-president in charge of traffic who added that during November, 1945, 27,192 passengers were flown, an increase of 9,162 over the same month last year.

Coincidental with the report of greatly increased traffic, the airline announced that effective January 1, it will adopt a 40-hour work week with no reduction in take-home pay, the new work week to apply to all ground and office personnel except departments where employees are now covered by formal working agreements. More than 1,000 employees in 25 cities will benefit by the new ruling.

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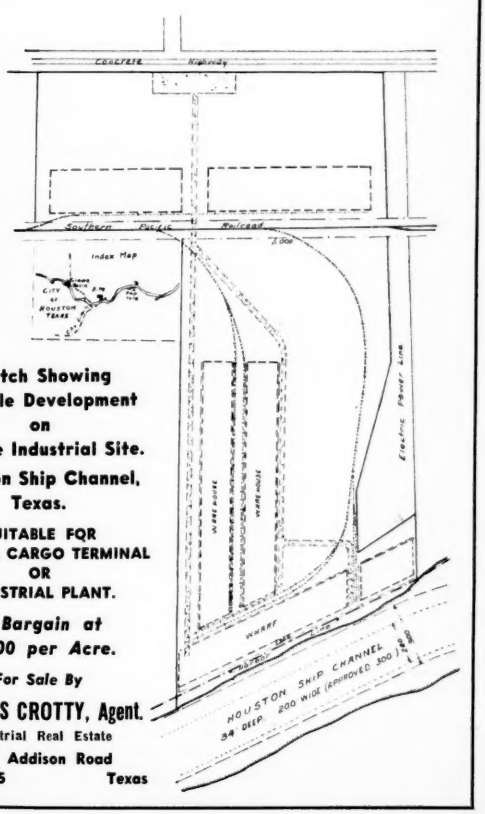

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260	Burke	440	600 EMV-65
50	Chandeysson	440	1800
20	West.	220	575 CW
20	Allis Chal.	440	1130 —
15	West.	220	870 CW
15	G.E.	440	845 I-8
15	Allis Chal.	440	1150

SQUIRREL CAGE MOTORS 3 ph. 60 cy.

HP	Make	Volts	RPM. Type
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125	West.	220	1800 CS
100	G. E.	2200	720 TS
75	Burke.	220	900 EM-10
75	West.	220/440	1800 MS
60	West.	220	1800 CS
60	Allis Ch.	220/440	1760 —
60	West.	220/440	1800 EMF
60	West.	220	1200 CS
50	West.	220	870 CS
2— 50	Al. Chal.	220	865 —
4— 50	West.	220	1800 CS
50/32	G.E.	440	800/640
45	West.	220/440	850 CS
40	Lincoln	220/440	900 —
2— 40	Al. Chal.	220	720 —
40	West.	220	720 CS
35	Linc.	220	720 K-8
20	West.	440	860 CS
20	G.E.	220	560 KT-532

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69	7½	1100/2200	110/220	G. E.
29	7½	2200/1100	110/220	West.
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6	10	2200/1100	220/110	West.
19	10	2200/1100	220/110	G. E.
2	10	2300	220/110	G. E.
1	10	2200/1100	440/220/110	West.
21	15	2200/1100	440/220/110	West.
3	15	2200	110/220	Packard
3	15	2200	110/220	Cr. Wh.
16	18	220	19½ /38½	Elec. Furnace
2	20	1150/2300	115/230	Maloney
1	20	2300	110/220	West.
2	20	2200/1100	440/220/110	West.
2	25	2300	110/220	West.
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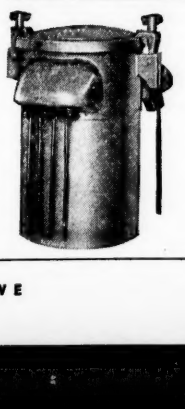

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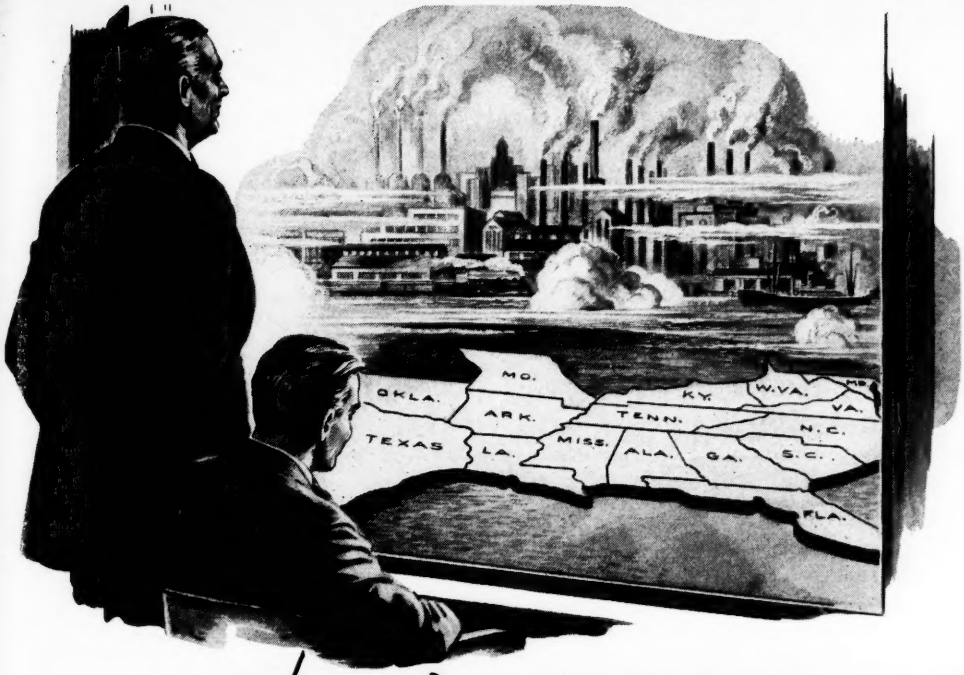

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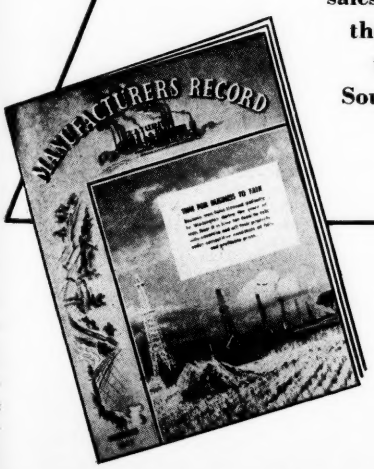

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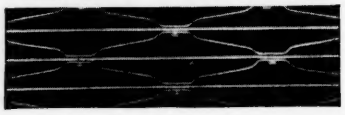

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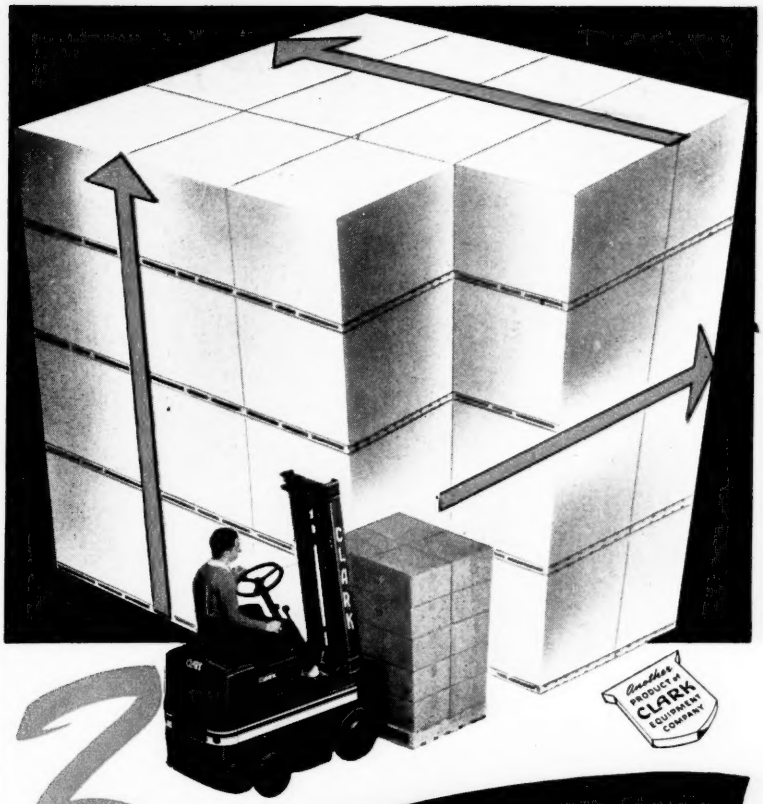

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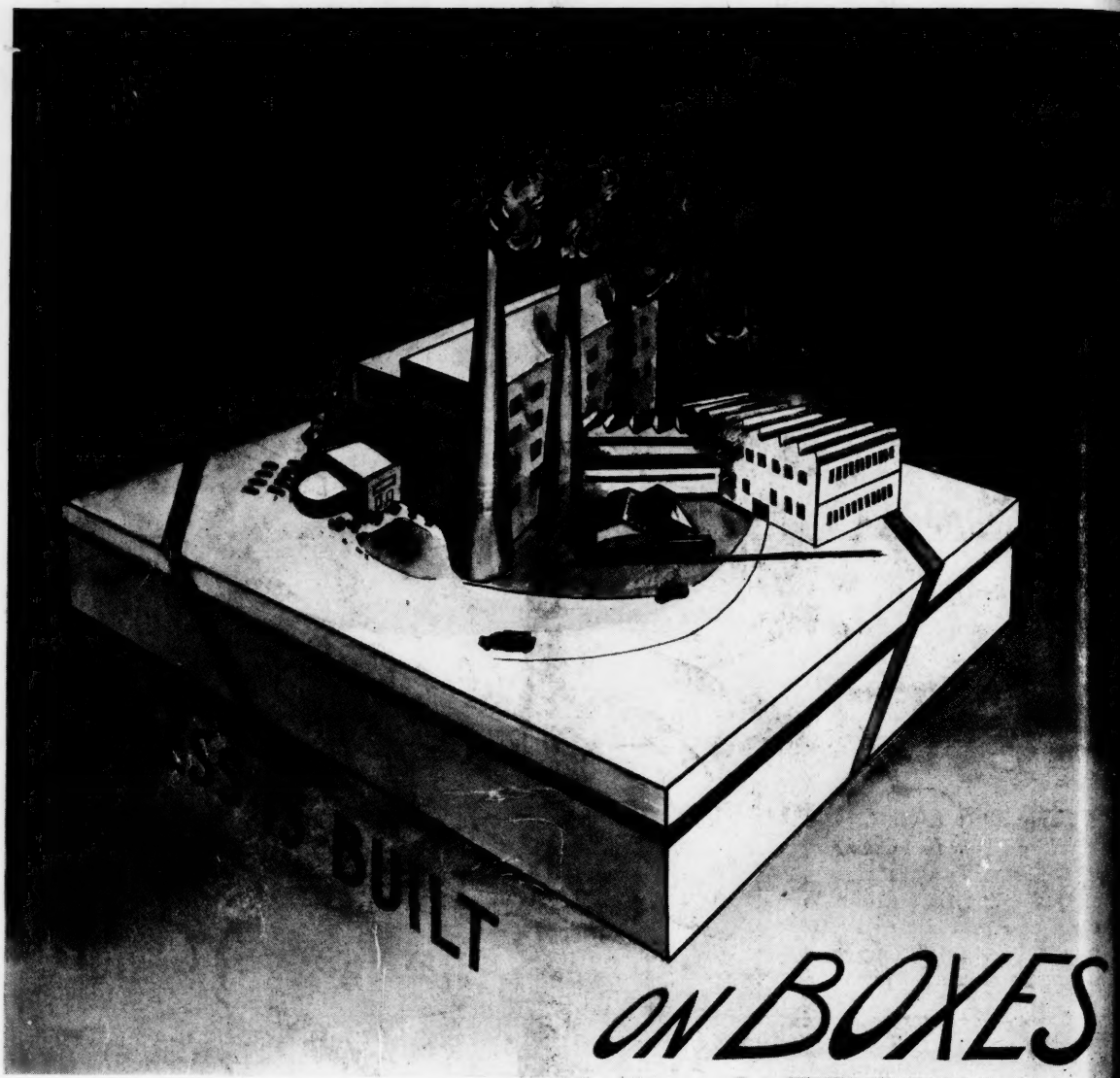

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